

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

**Safety Data Sheet**

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878  
SDS Reference Number: EQ0200  
Issue date: 2016/9/7 Revision date: 2025/1/5 Supersedes version of: 2023/8/21 Version: 1.3

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

Product form : Mixture  
Product name : Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211  
Product code : EQ0200

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

#### Relevant identified uses

Main use category : Industrial use, Professional use  
Use of the substance/mixture : Certified reference material for laboratory use  
Function or use category : Laboratory chemicals

### 1.3. Details of the supplier of the safety data sheet

#### Spectracer UK Ltd.

20 Seymour Mews,  
London,  
W1H 6BQ,  
United Kingdom.

Tel: +44 (0) 207 193 9114  
Fax: +44 (0) 203 432 4686  
Email: [contact@spectracer.com](mailto:contact@spectracer.com)  
Web: [www.spectracer.com](http://www.spectracer.com)

### 1.4. Emergency telephone number

| Country/Area   | Organisation/Company                                     | Address                                               | Emergency number                                                             | Comment |
|----------------|----------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------|---------|
| Ireland        | National Poisons Information Centre<br>Beaumont Hospital | Beaumont Hospital Beaumont<br>Road<br>9 Dublin        | : +353 1 8379964                                                             |         |
| Malta          | Medicines & Poisons Info Office                          | Mater Dei Hospital<br>Msida<br>MSD 2090 Msida         | 112<br>+356 2545 6508                                                        |         |
| United Kingdom | National Poisons Information Service<br>(NHS Direct)     | <a href="http://www.npis.org">http://www.npis.org</a> | 111 (England & Wales<br>only) or 112 (EU) or<br>08454 24 24 24<br>(Scotland) |         |

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### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification according to Regulation (EC) No. 1272/2008 [CLP]

|                                                        |      |
|--------------------------------------------------------|------|
| Corrosive to metals, Category 1                        | H290 |
| Skin corrosion/irritation, Category 1, Sub-Category 1B | H314 |
| Serious eye damage/eye irritation, Category 1          | H318 |
| Skin sensitisation, Category 1                         | H317 |
| Carcinogenicity, Category 1B                           | H350 |

Full text of H- and EUH-statements: see section 16

##### Adverse physicochemical, human health and environmental effects

May be corrosive to metals. May cause cancer. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage.

#### 2.2. Label elements

##### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Contains

: nitric acid;aluminium nitrate;ammonium metavanadate;arsenic acid;beryllium nitrate;cobalt dinitrate;chromium trinitrate;copper dinitrate;iron trinitrate;manganese dinitrate;nickel dinitrate;lead nitrate;zinc nitrate;cadmium nitrate;selenious acid;mercury nitrate

Hazard statements (CLP)

: H290 - May be corrosive to metals.  
H314 - Causes severe skin burns and eye damage.  
H317 - May cause an allergic skin reaction.  
H350 - May cause cancer.

Precautionary statements (CLP)

: P201 - Obtain special instructions before use.  
P260 - Do not breathe dusts or mists.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P330+P331+P310 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.  
P303+P361+P353+P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor.  
P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.  
P308+P313 - IF exposed or concerned: Get medical advice/attention.  
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.  
P362+P364 - Take off contaminated clothing and wash it before reuse.  
P390 - Absorb spillage to prevent material damage.

#### 2.3. Other hazards

Contains no PBT and/or vPvB substances  $\geq 0.1\%$  assessed in accordance with REACH Annex XIII

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| Component                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII  | nitric acid (7697-37-2), aluminium nitrate (13473-90-0), ammonium metavanadate (7803-55-6)( <sup>1</sup> ), arsenic acid (7778-39-4)( <sup>1</sup> ), beryllium nitrate (13597-99-4), cobalt dinitrate (10141-05-6)( <sup>1</sup> ), chromium trinitrate (13548-38-4)( <sup>1</sup> ), copper dinitrate (3251-23-8)( <sup>1</sup> ), iron trinitrate (10421-48-4)( <sup>1</sup> ), manganese dinitrate (10377-66-9)( <sup>1</sup> ), nickel dinitrate (13138-45-9)( <sup>1</sup> ), lead nitrate (10099-74-8)( <sup>1</sup> ), cadmium nitrate (10325-94-7)( <sup>1</sup> ), selenious acid (7783-00-8)( <sup>1</sup> ), mercury nitrate (10045-94-0)( <sup>1</sup> ) |
| Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII | nitric acid (7697-37-2), aluminium nitrate (13473-90-0), ammonium metavanadate (7803-55-6)( <sup>1</sup> ), arsenic acid (7778-39-4)( <sup>1</sup> ), beryllium nitrate (13597-99-4), cobalt dinitrate (10141-05-6)( <sup>1</sup> ), chromium trinitrate (13548-38-4)( <sup>1</sup> ), copper dinitrate (3251-23-8)( <sup>1</sup> ), iron trinitrate (10421-48-4)( <sup>1</sup> ), manganese dinitrate (10377-66-9)( <sup>1</sup> ), nickel dinitrate (13138-45-9)( <sup>1</sup> ), lead nitrate (10099-74-8)( <sup>1</sup> ), cadmium nitrate (10325-94-7)( <sup>1</sup> ), selenious acid (7783-00-8)( <sup>1</sup> ), mercury nitrate (10045-94-0)( <sup>1</sup> ) |

(<sup>1</sup>) Substance(s) in concentration below 0.1 % and displayed on a voluntary basis

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

| Component                                                                                                                                                                                                                                                                                                                               |                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Substance(s) not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 | cobalt dinitrate (10141-05-6)( <sup>1</sup> ), arsenic acid (7778-39-4)( <sup>1</sup> ), lead nitrate (10099-74-8)( <sup>1</sup> ) |

(<sup>1</sup>) Substance(s) in concentration below 0.1 % and displayed on a voluntary basis

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

| Name                                                                                                                                                                                                                                                                 | Product identifier                                                                                       | %       | Classification according to Regulation (EC) No. 1272/2008 [CLP]                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------|
| nitric acid<br>substance with national workplace exposure limit(s) (AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PT, RO, SE, SI, SK, AL, IS, NO, MK, RS, CH, TR); substance with a Community workplace exposure limit | CAS-No.: 7697-37-2<br>EC-No.: 231-714-2<br>EC Index-No.: 007-004-00-1<br>REACH-no: 01-2119487297-23-XXXX | 5 – 10  | Ox. Liq. 2, H272<br>Met. Corr. 1, H290<br>Acute Tox. 1 (Inhalation), H330<br>Skin Corr. 1A, H314<br>Eye Dam. 1, H318 |
| aluminium nitrate<br>substance with national workplace exposure limit(s) (AT, BE, BG, DE, DK, EE, FR, GB, GR, HR, HU, IE, SE, NO, CH)                                                                                                                                | CAS-No.: 13473-90-0<br>EC-No.: 236-751-8                                                                 | 0,5 – 1 | Eye Dam. 1, H318                                                                                                     |

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according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

| Name                                                                                                                                                                                                                                    | Product identifier                                                          | %          | Classification according to Regulation (EC) No. 1272/2008 [CLP]                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| beryllium nitrate<br>substance with national workplace exposure limit(s)<br>(AT, BE, BG, CZ, DE, DK, EE, ES, FI, GB, HR, HU, IE, PL, PT, RO, SE, SI, IS, MK); substance with a Community workplace exposure limit                       | CAS-No.: 13597-99-4<br>EC-No.: 237-062-5<br>EC Index-No.: 004-002-00-2      | 0,1 – 0,25 | Ox. Sol. 2, H272<br>Acute Tox. 3 (Oral), H301<br>Acute Tox. 2 (Inhalation), H330<br>Skin Irrit. 2, H315<br>Eye Irrit. 2, H319<br>Skin Sens. 1, H317<br>Carc. 1B, H350i<br>STOT SE 3, H335<br>STOT RE 1, H372<br>Aquatic Chronic 2, H411                                                                       |
| ammonium metavanadate<br>substance with national workplace exposure limit(s)<br>(AT, CZ, NL, SI, NO)                                                                                                                                    | CAS-No.: 7803-55-6<br>EC-No.: 232-261-3                                     | 0,05 – 0,1 | Acute Tox. 3 (Oral), H301<br>Acute Tox. 4 (Inhalation:dust,mist), H332<br>Eye Irrit. 2, H319<br>Repr. 2, H361d<br>STOT RE 1, H372<br>Aquatic Acute 1, H400<br>Aquatic Chronic 2, H411                                                                                                                         |
| chromium trinitrate<br>substance with national workplace exposure limit(s)<br>(AT, BE, CZ, DE, DK, ES, FI, FR, GB, GI, GR, HR, HU, IE, LT, LU, MT, NL, PL, PT, RO, SE, SI, AL, IS); substance with a Community workplace exposure limit | CAS-No.: 13548-38-4<br>EC-No.: 236-921-1                                    | < 0,05     | Ox. Sol. 3, H272<br>Acute Tox. Not classified (Oral)<br>Acute Tox. 4 (Inhalation), H332<br>Skin Sens. 1A, H317<br>Aquatic Chronic 2, H411                                                                                                                                                                     |
| iron trinitrate<br>substance with national workplace exposure limit(s)<br>(BE, DK, ES, GB, GR, HR, IE, PT, IS, NO, CH)                                                                                                                  | CAS-No.: 10421-48-4<br>EC-No.: 233-899-5<br>REACH-no: 01-2119978293-27-XXXX | < 0,05     | Skin Corr. 1B, H314<br>Eye Dam. 1, H318<br>Aquatic Acute Not classified                                                                                                                                                                                                                                       |
| manganese dinitrate<br>substance with national workplace exposure limit(s)<br>(AT, BE, BG, CZ, DE, DK, ES, FI, HR, HU, IE, LV, NL, PL, PT, RO, SE, SI, IS, NO, MK, CH); substance with a Community workplace exposure limit             | CAS-No.: 10377-66-9<br>EC-No.: 233-828-8                                    | < 0,05     | Ox. Sol. 2, H272<br>Acute Tox. 4 (Oral), H302<br>Skin Corr. 1C, H314<br>Eye Dam. 1, H318<br>STOT RE 2, H373<br>Aquatic Chronic 4, H413                                                                                                                                                                        |
| nickel dinitrate<br>substance with national workplace exposure limit(s)<br>(AT, BG, CZ, DE, DK, EE, ES, FI, FR, GB, HR, HU, IE, LT, PL, PT, RO, SE, SI, IS, CH); substance with a Community workplace exposure limit                    | CAS-No.: 13138-45-9<br>EC-No.: 236-068-5<br>EC Index-No.: 028-012-00-1      | < 0,05     | Ox. Sol. 2, H272<br>Acute Tox. 4 (Oral), H302<br>Acute Tox. 4 (Inhalation), H332<br>Skin Irrit. 2, H315<br>Eye Dam. 1, H318<br>Resp. Sens. 1, H334<br>Skin Sens. 1, H317<br>Muta. 2, H341<br>Carc. 1A, H350i<br>Repr. 1B, H360D<br>STOT RE 1, H372<br>Aquatic Acute 1, H400 (M=10)<br>Aquatic Chronic 1, H410 |

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| Name                                                                                                                                                                                                                                                                                                   | Product identifier                                                     | %      | Classification according to Regulation (EC) No. 1272/2008 [CLP]                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cobalt dinitrate<br>substance listed on REACH Candidate List (Cobalt(II) dinitrate)<br>substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, GB, GR, HR, HU, IE, LV, NL, PT, RO, SE, IS, CH)<br>Percentage by Weight of the metallic element: 0,009985100000000000% | CAS-No.: 10141-05-6<br>EC-No.: 233-402-1<br>EC Index-No.: 027-009-00-2 | < 0,05 | Ox. Sol. 2, H272<br>Acute Tox. 4 (Oral), H302<br>Eye Dam. 1, H318<br>Resp. Sens. 1, H334<br>Skin Sens. 1, H317<br>Muta. 2, H341<br>Carc. 1B, H350i<br>Repr. 1B, H360FD<br>STOT RE Not classified<br>Aquatic Acute 1, H400<br>Aquatic Chronic 1, H410 |
| copper dinitrate<br>substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DK, EE, ES, FI, FR, GB, HR, HU, IE, LV, NL, PL, PT, RO, SE, IS, NO, CH); substance with a Community workplace exposure limit                                                                                  | CAS-No.: 3251-23-8<br>EC-No.: 221-838-5                                | < 0,05 | Ox. Sol. 2, H272<br>Acute Tox. 4 (Oral), H302<br>Skin Corr. 1B, H314<br>Eye Dam. 1, H318<br>Aquatic Acute 1, H400 (M=10)<br>Aquatic Chronic 2, H411                                                                                                  |
| arsenic acid<br>substance listed on REACH Candidate List<br>substance listed on REACH Annex XIV<br>substance with national workplace exposure limit(s) (AT, BE, CZ, DE, DK, EE, ES, FI, GB, HR, HU, IE, IT, LT, NL, PL, PT, SI, IS, MK, CH); substance with a Community workplace exposure limit       | CAS-No.: 7778-39-4<br>EC-No.: 231-901-9<br>EC Index-No.: 033-005-00-1  | < 0,05 | Acute Tox. 3 (Oral), H301<br>Acute Tox. 4 (Dermal), H312<br>Acute Tox. 3 (Inhalation), H331<br>Carc. 1A, H350<br>Aquatic Acute 1, H400<br>Aquatic Chronic 1, H410                                                                                    |
| lead nitrate<br>substance listed on REACH Candidate List (Lead dinitrate)<br>substance with national workplace exposure limit(s) (AT, BG, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, NL, PT, RO, SE, IS, MK, CH); substance with a Community workplace exposure limit                         | CAS-No.: 10099-74-8<br>EC-No.: 233-245-9<br>EC Index-No.: 082-001-00-6 | < 0,05 | Ox. Sol. 2, H272<br>Acute Tox. 4 (Oral), H302<br>Acute Tox. 4 (Inhalation), H332<br>Eye Dam. 1, H318<br>Skin Sens. 1B, H317<br>Carc. 2, H351<br>Repr. 1A, H360Df<br>STOT RE 2, H373<br>Aquatic Acute 1, H400 (M=10)<br>Aquatic Chronic 1, H410       |
| cadmium nitrate<br>substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, ES, FI, GB, HR, HU, IE, IT, LU, MT, NL, PL, PT, RO, SE, SI, SK, IS, MK); substance with a Community workplace exposure limit                                                                           | CAS-No.: 10325-94-7<br>EC-No.: 233-710-6<br>EC Index-No.: 048-001-00-5 | < 0,05 | Acute Tox. 3 (Oral), H301<br>Acute Tox. 4 (Dermal), H312<br>Acute Tox. 2 (Inhalation), H330<br>Muta. 1B, H340<br>Carc. 1B, H350<br>Repr. 1B, H360FD<br>STOT RE 1, H372<br>Aquatic Acute 1, H400 (M=10)<br>Aquatic Chronic 1, H410                    |
| selenious acid<br>substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, GB, HR, IE, PL, PT, RO, SE, IS, MK, CH)                                                                                                                                                     | CAS-No.: 7783-00-8<br>EC-No.: 231-974-7<br>EC Index-No.: 034-002-00-8  | < 0,05 | Acute Tox. 3 (Oral), H301<br>Acute Tox. 3 (Inhalation), H331<br>STOT RE 2, H373<br>Aquatic Acute 1, H400<br>Aquatic Chronic 1, H410                                                                                                                  |

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| Name                                                                                                                                                                                                                           | Product identifier                                                     | %      | Classification according to Regulation (EC) No. 1272/2008 [CLP]                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mercury nitrate<br>substance with national workplace exposure limit(s)<br>(AT, BE, BG, CZ, DE, DK, ES, FI, FR, GB, GI, GR, HR, HU, IE, NL, PT, RO, SE, IS, NO, RS, CH);<br>substance with a Community workplace exposure limit | CAS-No.: 10045-94-0<br>EC-No.: 233-152-3<br>EC Index-No.: 080-002-00-6 | < 0,05 | Acute Tox. 2 (Oral), H300<br>Acute Tox. 1 (Dermal), H310<br>Acute Tox. 2 (Inhalation), H330<br>STOT RE 2, H373<br>Aquatic Acute 1, H400 (M=100)<br>Aquatic Chronic 1, H410 |

| Specific concentration limits: |                                                                                                          |                                                                                                                                             |
|--------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Name                           | Product identifier                                                                                       | Specific concentration limits (%)                                                                                                           |
| nitric acid                    | CAS-No.: 7697-37-2<br>EC-No.: 231-714-2<br>EC Index-No.: 007-004-00-1<br>REACH-no: 01-2119487297-23-XXXX | (5 ≤ C < 20) Skin Corr. 1B; H314<br>(20 ≤ C < 100) Skin Corr. 1A; H314<br>(65 ≤ C < 99) Ox. Liq. 3; H272<br>(99 ≤ C < 100) Ox. Liq. 2; H272 |
| nickel dinitrate               | CAS-No.: 13138-45-9<br>EC-No.: 236-068-5<br>EC Index-No.: 028-012-00-1                                   | (0,01 ≤ C ≤ 100) Skin Sens. 1; H317<br>(0,1 < C < 1) STOT RE 2; H373<br>(1 ≤ C ≤ 100) STOT RE 1; H372<br>(20 ≤ C ≤ 100) Skin Irrit. 2; H315 |
| cobalt dinitrate               | CAS-No.: 10141-05-6<br>EC-No.: 233-402-1<br>EC Index-No.: 027-009-00-2                                   | (0,01 ≤ C ≤ 100) Carc. 1B; H350i                                                                                                            |
| lead nitrate                   | CAS-No.: 10099-74-8<br>EC-No.: 233-245-9<br>EC Index-No.: 082-001-00-6                                   | (0,5 ≤ C ≤ 100) STOT RE 2; H373<br>(2,5 ≤ C ≤ 100) Repr. 2; H361f                                                                           |
| cadmium nitrate                | CAS-No.: 10325-94-7<br>EC-No.: 233-710-6<br>EC Index-No.: 048-001-00-5                                   | (0,01 ≤ C < 100) Carc. 1B; H350<br>(0,1 ≤ C < 7) STOT RE 2; H373<br>(7 ≤ C < 100) STOT RE 1; H372                                           |
| mercury nitrate                | CAS-No.: 10045-94-0<br>EC-No.: 233-152-3<br>EC Index-No.: 080-002-00-6                                   | (0,1 ≤ C ≤ 100) STOT RE 2; H373                                                                                                             |

Full text of H- and EUH-statements: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

|                                       |                                                                                                                                                      |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| First-aid measures general            | : Call a physician immediately.                                                                                                                      |
| First-aid measures after inhalation   | : Remove person to fresh air and keep comfortable for breathing.                                                                                     |
| First-aid measures after skin contact | : Rinse skin with water/shower. Take off immediately all contaminated clothing. Call a physician immediately.                                        |
| First-aid measures after eye contact  | : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately. |
| First-aid measures after ingestion    | : Rinse mouth. Do not induce vomiting. Call a physician immediately.                                                                                 |
| First-aid measures for first aider    | : First aid workers will be equipped with suitable personal protective equipment.                                                                    |

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### 4.2. Most important symptoms and effects, both acute and delayed

|                                     |                                               |
|-------------------------------------|-----------------------------------------------|
| Symptoms/effects after inhalation   | : None under normal conditions.               |
| Symptoms/effects after skin contact | : Burns. May cause an allergic skin reaction. |
| Symptoms/effects after eye contact  | : Serious damage to eyes.                     |
| Symptoms/effects after ingestion    | : Burns.                                      |

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

|                                |                                                  |
|--------------------------------|--------------------------------------------------|
| Suitable extinguishing media   | : Water spray. Dry powder. Foam. Carbon dioxide. |
| Unsuitable extinguishing media | : Do not use a heavy water stream.               |

### 5.2. Special hazards arising from the substance or mixture

|                                                  |                                |
|--------------------------------------------------|--------------------------------|
| Fire hazard                                      | : No fire hazard.              |
| Explosion hazard                                 | : No direct explosion hazard.  |
| Hazardous decomposition products in case of fire | : Toxic fumes may be released. |

### 5.3. Advice for firefighters

|                                |                                                                                                                                                       |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Firefighting instructions      | : Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection. |
| Protection during firefighting | : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.              |

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

|                                    |                                                                                                                                                             |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General measures                   | : Stop leak if safe to do so. Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material damage.                     |
| <b>For non-emergency personnel</b> |                                                                                                                                                             |
| Protective equipment               | : Wear recommended personal protective equipment.                                                                                                           |
| Emergency procedures               | : Only qualified personnel equipped with suitable protective equipment may intervene. Do not breathe dust/fume/gas/mist/vapours/spray.                      |
| <b>For emergency responders</b>    |                                                                                                                                                             |
| Protective equipment               | : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". |
| Emergency procedures               | : Evacuate unnecessary personnel. Stop leak if safe to do so.                                                                                               |

### 6.2. Environmental precautions

Avoid release to the environment. Notify authorities if product enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

|                         |                                                                                                                                                                                       |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For containment         | : Absorb spilled material with sand or earth. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak without risks if possible. |
| Methods for cleaning up | : Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters.                                                                         |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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Other information : Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Additional hazards when processed | : Not expected to present a significant hazard under anticipated conditions of normal use.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Precautions for safe handling     | : Ensure good ventilation of the work station. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Wear personal protective equipment. Floors, walls and other surfaces in the hazard area must be cleaned regularly. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray. |
| Hygiene measures                  | : Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.                                                                                                                                                                                                                                                                                                                                                          |

### 7.2. Conditions for safe storage, including any incompatibilities

|                        |                                                                                                                          |
|------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Technical measures     | : Keep in a cool, well-ventilated place away from heat.                                                                  |
| Storage conditions     | : Store in corrosive resistant container with a resistant inner liner. Keep only in original container. Store locked up. |
| Incompatible materials | : Metals.                                                                                                                |
| Packaging materials    | : Store always product in container of same material as original container.                                              |

#### Germany

|                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |          |           |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|-----------|-------|----------|----------|---------|---------|----------|----------|----------|---------|----------|----------|----------|----------|---------|-------|--------|--------|--------|--------|--------|--------|-----------|
| Storage class (LGK, TRGS 510)                 | : LGK 6.1D - Non-combustible substances of acute toxicity, category 3 / hazardous substances that are toxic or produce chronic effects                                                                                                                                                                                                                                                                                                                                      |          |          |           |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |
| Joint storage table                           | : <table><tr><td>LGK 1</td><td>LGK 2A</td><td>LGK 2B</td><td>LGK 3</td><td>LGK 4.1A</td></tr><tr><td>LGK 4.1B</td><td>LGK 4.2</td><td>LGK 4.3</td><td>LGK 5.1A</td><td>LGK 5.1B</td></tr><tr><td>LGK 5.1C</td><td>LGK 5.2</td><td>LGK 6.1A</td><td>LGK 6.1B</td><td>LGK 6.1C</td></tr><tr><td>LGK 6.1D</td><td>LGK 6.2</td><td>LGK 7</td><td>LGK 8A</td><td>LGK 8B</td></tr><tr><td>LGK 10</td><td>LGK 11</td><td>LGK 12</td><td>LGK 13</td><td>LGK 10-13</td></tr></table> | LGK 1    | LGK 2A   | LGK 2B    | LGK 3 | LGK 4.1A | LGK 4.1B | LGK 4.2 | LGK 4.3 | LGK 5.1A | LGK 5.1B | LGK 5.1C | LGK 5.2 | LGK 6.1A | LGK 6.1B | LGK 6.1C | LGK 6.1D | LGK 6.2 | LGK 7 | LGK 8A | LGK 8B | LGK 10 | LGK 11 | LGK 12 | LGK 13 | LGK 10-13 |
| LGK 1                                         | LGK 2A                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LGK 2B   | LGK 3    | LGK 4.1A  |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |
| LGK 4.1B                                      | LGK 4.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | LGK 4.3  | LGK 5.1A | LGK 5.1B  |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |
| LGK 5.1C                                      | LGK 5.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | LGK 6.1A | LGK 6.1B | LGK 6.1C  |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |
| LGK 6.1D                                      | LGK 6.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | LGK 7    | LGK 8A   | LGK 8B    |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |
| LGK 10                                        | LGK 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LGK 12   | LGK 13   | LGK 10-13 |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |
| Joint storage not permitted for               | : LGK 1, LGK 2A, LGK 4.1A, LGK 5.1A, LGK 5.1C, LGK 5.2, LGK 6.2, LGK 7                                                                                                                                                                                                                                                                                                                                                                                                      |          |          |           |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |
| Joint storage with restrictions permitted for | : LGK 3, LGK 4.1B, LGK 4.2, LGK 4.3, LGK 5.1B                                                                                                                                                                                                                                                                                                                                                                                                                               |          |          |           |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |
| Joint storage permitted for                   | : LGK 2B, LGK 6.1A, LGK 6.1B, LGK 6.1C, LGK 6.1D, LGK 8A, LGK 8B, LGK 10, LGK 11, LGK 12, LGK 13, LGK 10-13                                                                                                                                                                                                                                                                                                                                                                 |          |          |           |       |          |          |         |         |          |          |          |         |          |          |          |          |         |       |        |        |        |        |        |        |           |

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### National occupational exposure and biological limit values



Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                                    |                                                                                                                                                                                   |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nitric acid (7697-37-2)                            |                                                                                                                                                                                   |
| EU - Indicative Occupational Exposure Limit (IOEL) |                                                                                                                                                                                   |
| Local name                                         | Nitric acid                                                                                                                                                                       |
| IOEL STEL                                          | 2,6 mg/m³                                                                                                                                                                         |
|                                                    | 1 ppm                                                                                                                                                                             |
| Regulatory reference                               | COMMISSION DIRECTIVE 2006/15/EC                                                                                                                                                   |
| Albania - Occupational Exposure Limits             |                                                                                                                                                                                   |
| Local name                                         | Acid nitrik                                                                                                                                                                       |
| OEL STEL                                           | 2,6 mg/m³                                                                                                                                                                         |
|                                                    | 1 ppm                                                                                                                                                                             |
| Regulatory reference                               | VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES “PËR MBROJTJEN E SIGURISË DHE SHËNETIT TË PUNËMARRËSVE NGA RISQET E LIDHURA ME AGJENTËT KIMIKË NË PUNË”                 |
| Austria - Occupational Exposure Limits             |                                                                                                                                                                                   |
| Local name                                         | Salpetersäure                                                                                                                                                                     |
| OEL C                                              | 2,6 mg/m³                                                                                                                                                                         |
|                                                    | 1 ppm                                                                                                                                                                             |
| Regulatory reference                               | BGBI. II Nr. 156/2021                                                                                                                                                             |
| Belgium - Occupational Exposure Limits             |                                                                                                                                                                                   |
| Local name                                         | Acide nitrique # Salpeterzuur                                                                                                                                                     |
| OEL STEL                                           | 2,6 mg/m³                                                                                                                                                                         |
|                                                    | 1 ppm                                                                                                                                                                             |
| Regulatory reference                               | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                        |
| Bulgaria - Occupational Exposure Limits            |                                                                                                                                                                                   |
| Local name                                         | Азотна киселина                                                                                                                                                                   |
| OEL STEL                                           | 2,6 mg/m³                                                                                                                                                                         |
|                                                    | 1 ppm                                                                                                                                                                             |
| Remark                                             | • (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)                                                              |
| Regulatory reference                               | Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.) |
| Croatia - Occupational Exposure Limits             |                                                                                                                                                                                   |
| Local name                                         | Dušična kiselina                                                                                                                                                                  |
| KGVI (OEL STEL)                                    | 2,6 mg/m³                                                                                                                                                                         |
|                                                    | 1 ppm                                                                                                                                                                             |
| Remark                                             | Direktiva: 2006/15/EZ                                                                                                                                                             |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| nitric acid (7697-37-2)                       |                                                                                                                                                                |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023) |
| Cyprus - Occupational Exposure Limits         |                                                                                                                                                                |
| Local name                                    | Νιτρικό οξύ                                                                                                                                                    |
| OEL STEL                                      | 2,6 mg/m <sup>3</sup>                                                                                                                                          |
|                                               | 1 ppm                                                                                                                                                          |
| Regulatory reference                          | Κανονισμοί του 2007 (Κ.Δ.Π. 295/2007)                                                                                                                          |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                |
| Local name                                    | Kyselina dusičná                                                                                                                                               |
| PEL (OEL TWA)                                 | 1 mg/m <sup>3</sup>                                                                                                                                            |
|                                               | 0,38 ppm                                                                                                                                                       |
| NPK-P (OEL C)                                 | 2,5 mg/m <sup>3</sup>                                                                                                                                          |
|                                               | 0,95 ppm                                                                                                                                                       |
| Remark                                        | I - dráždí sliznice (oči, dýchací cesty) resp. kůže.                                                                                                           |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                          |
| Denmark - Occupational Exposure Limits        |                                                                                                                                                                |
| Local name                                    | Salpetersyre                                                                                                                                                   |
| OEL STEL                                      | 2,6 mg/m <sup>3</sup>                                                                                                                                          |
|                                               | 1 ppm                                                                                                                                                          |
| Remark                                        | E (betyder, at stoffet har en EF-grænseværdi); S (betyder, at grænseværdien ikke bør overskrides. Værdien gælder for en eksponeringsperiode på 15 minutter)    |
| Regulatory reference                          | BEK nr 291 af 19/03/2024                                                                                                                                       |
| Estonia - Occupational Exposure Limits        |                                                                                                                                                                |
| Local name                                    | Lämmastikhape                                                                                                                                                  |
| OEL STEL                                      | 2,6 mg/m <sup>3</sup>                                                                                                                                          |
|                                               | 1 ppm                                                                                                                                                          |
| Regulatory reference                          | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                   |
| Finland - Occupational Exposure Limits        |                                                                                                                                                                |
| Local name                                    | Typpihappo                                                                                                                                                     |
| HTP (OEL TWA)                                 | 1,3 mg/m <sup>3</sup>                                                                                                                                          |
|                                               | 0,5 ppm                                                                                                                                                        |
| HTP (OEL STEL)                                | 2,6 mg/m <sup>3</sup>                                                                                                                                          |
|                                               | 1 ppm                                                                                                                                                          |
| Regulatory reference                          | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                                                |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| nitric acid (7697-37-2)                           |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| France - Occupational Exposure Limits             |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                        | Acide nitrique                                                                                                                                                                                                                                                                                                                                                                                                                         |
| VLE (OEL C/STEL)                                  | 2,6 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                   | 1 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                            | Valeurs règlementaires indicatives                                                                                                                                                                                                                                                                                                                                                                                                     |
| Regulatory reference                              | Arrêté du 30 juin 2004 modifié (réf.: INRS ED 6443, 2022; Outil65; Arrêté du 26 octobre 2007)                                                                                                                                                                                                                                                                                                                                          |
| Germany - Occupational Exposure Limits (TRGS 900) |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                        | Salpetersäure                                                                                                                                                                                                                                                                                                                                                                                                                          |
| AGW (OEL TWA)                                     | 2,6 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                   | 1 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                            | EU - Europäische Union (Von der EU wurde ein Luftgrenzwert festgelegt: Abweichungen bei Wert und Spitzenbegrenzung sind möglich); 13 - Eine Begründung für die Ableitung eines gesundheitsbasierten AGW liegt nicht vor; 16 - Der Arbeitsplatzgrenzwert ist nur als Kurzzeitwert festgelegt. Die betriebliche Überwachung soll durch messtechnische Mittelwertbildung über 15 Minuten erfolgen, z.B. durch eine 15-minütige Probenahme |
| Regulatory reference                              | TRGS900                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Gibraltar - Occupational Exposure Limits          |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                        | Nitric acid                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OEL STEL                                          | 2,6 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                   | 1 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                              | Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)                                                                                                                                                                                                                                                                                                                                                         |
| Greece - Occupational Exposure Limits             |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                        | Νιτρικό οξύ                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OEL STEL                                          | 2,6 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                   | 1 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                              | Π.Δ. 162/2007 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους                                                                                                                                                                                                                                                                                               |
| Hungary - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                        | SALÉTROMSAV                                                                                                                                                                                                                                                                                                                                                                                                                            |
| CK (OEL STEL)                                     | 2,6 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                            | i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat), m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármat); EU2 (2006/15/EK irányelvben közölt érték)                                                                                                                                                                                                                         |
| Regulatory reference                              | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                                                                                                                       |
| Ireland - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                        | Nitric acid                                                                                                                                                                                                                                                                                                                                                                                                                            |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                            |                                                                                                                                                                     |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nitric acid (7697-37-2)                    |                                                                                                                                                                     |
| OEL STEL                                   | 2,6 mg/m³                                                                                                                                                           |
|                                            | 1 ppm                                                                                                                                                               |
| Remark                                     | IOELV (Indicative Occupational Exposure Limit Values)                                                                                                               |
| Regulatory reference                       | Chemical Agents Code of Practice 2024                                                                                                                               |
| Italy - Occupational Exposure Limits       |                                                                                                                                                                     |
| Local name                                 | Acido nitrico                                                                                                                                                       |
| OEL STEL                                   | 2,6 mg/m³                                                                                                                                                           |
|                                            | 1 ppm                                                                                                                                                               |
| Regulatory reference                       | Allegato XXXVIII del Decreto Legislativo 4 settembre 2024, n. 135                                                                                                   |
| Latvia - Occupational Exposure Limits      |                                                                                                                                                                     |
| Local name                                 | Slāpekšķābe                                                                                                                                                         |
| OEL TWA                                    | 2 mg/m³                                                                                                                                                             |
|                                            | 0,78 ppm                                                                                                                                                            |
| OEL STEL                                   | 2,6 mg/m³                                                                                                                                                           |
|                                            | 1 ppm                                                                                                                                                               |
| Regulatory reference                       | Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).                                  |
| Lithuania - Occupational Exposure Limits   |                                                                                                                                                                     |
| Local name                                 | Nitrato rūgštis (azoto rūgštis)                                                                                                                                     |
| TPRV (OEL STEL)                            | 2,6 mg/m³                                                                                                                                                           |
|                                            | 1 ppm                                                                                                                                                               |
| Regulatory reference                       | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)                                                                                                   |
| Luxembourg - Occupational Exposure Limits  |                                                                                                                                                                     |
| Local name                                 | Acide nitrique                                                                                                                                                      |
| OEL STEL                                   | 2,6 mg/m³                                                                                                                                                           |
|                                            | 1 ppm                                                                                                                                                               |
| Regulatory reference                       | Mémorial A N° 226 de 2021 concernant la protection de la sécurité et de la santé des salariés contre les risques liés à des agents chimiques sur le lieu de travail |
| Malta - Occupational Exposure Limits       |                                                                                                                                                                     |
| Local name                                 | Nitric acid                                                                                                                                                         |
| OEL STEL                                   | 2,6 mg/m³                                                                                                                                                           |
|                                            | 1 ppm                                                                                                                                                               |
| Regulatory reference                       | S.L. 424.24 - Chemical Agents at Work Regulations (L.N. 356 of 2021) # L.S. 424.24 - Regolamenti dwar Aġenti Kimiċi fuq il-Post tax-Xogħol (A.L. 356 tal-2021)      |
| Netherlands - Occupational Exposure Limits |                                                                                                                                                                     |
| Local name                                 | Salpeterzuur                                                                                                                                                        |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                         |                                                                                                                                                           |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| nitric acid (7697-37-2)                 |                                                                                                                                                           |
| TGG-15min (OEL STEL)                    | 1,3 mg/m³                                                                                                                                                 |
|                                         | 0,5 ppm (Salpeterzuur; Netherlands; Short time value; Public occupational exposure limit value)                                                           |
| Regulatory reference                    | Arbeidsomstandighedenregeling 2024                                                                                                                        |
| Portugal - Occupational Exposure Limits |                                                                                                                                                           |
| Local name                              | Ácido nítrico                                                                                                                                             |
| OEL TWA                                 | 2 ppm                                                                                                                                                     |
| OEL STEL                                | 4 ppm                                                                                                                                                     |
| Regulatory reference                    | Norma Portuguesa NP 1796:2014                                                                                                                             |
| Romania - Occupational Exposure Limits  |                                                                                                                                                           |
| Local name                              | Acid nitric/Acid azotic                                                                                                                                   |
| OEL STEL                                | 2,6 mg/m³                                                                                                                                                 |
|                                         | 1 ppm                                                                                                                                                     |
| Regulatory reference                    | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)                                                                                              |
| Serbia - Occupational Exposure Limits   |                                                                                                                                                           |
| Local name                              | азотна киселина                                                                                                                                           |
| OEL STEL                                | 3 mg/m³                                                                                                                                                   |
|                                         | 1 ppm                                                                                                                                                     |
| Remark                                  | ЕУ** – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2006/15/ЕЗ (друга листа) |
| Regulatory reference                    | ПРАВИЛНИК о превентивним мерама за безбедан и здрав рад при излагању хемијским материјама („Службени гласник РС”, бр. 106/09, 117/17 и 107/21)            |
| Slovakia - Occupational Exposure Limits |                                                                                                                                                           |
| Local name                              | Kyselina dusičná                                                                                                                                          |
| NPHV (OEL STEL)                         | 2,6 mg/m³                                                                                                                                                 |
|                                         | 1 ppm                                                                                                                                                     |
| Regulatory reference                    | Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)                                                                                                       |
| Slovenia - Occupational Exposure Limits |                                                                                                                                                           |
| Local name                              | dušikova kislina                                                                                                                                          |
| OEL TWA                                 | 2,6 mg/m³                                                                                                                                                 |
|                                         | 1 ppm                                                                                                                                                     |
| OEL STEL                                | 2,6 mg/m³                                                                                                                                                 |
|                                         | 1 ppm                                                                                                                                                     |
| Remark                                  | EU                                                                                                                                                        |
| Regulatory reference                    | Uradni list RS, št. 29/2024 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu              |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                                |                                                                                           |
|------------------------------------------------|-------------------------------------------------------------------------------------------|
| nitric acid (7697-37-2)                        |                                                                                           |
| Spain - Occupational Exposure Limits           |                                                                                           |
| Local name                                     | Ácido nítrico                                                                             |
| VLA-EC (OEL STEL)                              | 2,6 mg/m³                                                                                 |
|                                                | 1 ppm                                                                                     |
| Remark                                         | VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo). |
| Regulatory reference                           | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT             |
| Sweden - Occupational Exposure Limits          |                                                                                           |
| Local name                                     | Salpetersyra                                                                              |
| NGV (OEL TWA)                                  | 1,3 mg/m³                                                                                 |
|                                                | 0,5 ppm                                                                                   |
| KGV (OEL STEL)                                 | 2,6 mg/m³                                                                                 |
|                                                | 1 ppm                                                                                     |
| Regulatory reference                           | Hygieniska gränsvärden (AFS 2018:1)                                                       |
| United Kingdom - Occupational Exposure Limits  |                                                                                           |
| Local name                                     | Nitric acid                                                                               |
| WEL STEL (OEL STEL)                            | 2,6 mg/m³                                                                                 |
|                                                | 1 ppm                                                                                     |
| Regulatory reference                           | EH40/2005 (Fourth edition, 2020). HSE                                                     |
| Iceland - Occupational Exposure Limits         |                                                                                           |
| Local name                                     | Saltpéturssýra                                                                            |
| OEL STEL                                       | 2,6 mg/m³                                                                                 |
|                                                | 1 ppm                                                                                     |
| Regulatory reference                           | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009) |
| Norway - Occupational Exposure Limits          |                                                                                           |
| Local name                                     | Salpetersyre                                                                              |
| Grenseverdi (OEL TWA)                          | 5 mg/m³                                                                                   |
|                                                | 2 ppm                                                                                     |
| Remark                                         | E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet.                      |
| Regulatory reference                           | FOR-2024-04-05-581                                                                        |
| North Macedonia - Occupational Exposure Limits |                                                                                           |
| Local name                                     | азотна киселина                                                                           |
| OEL TWA                                        | 2,6 mg/m³                                                                                 |
|                                                | 1 ppm                                                                                     |
| KTV                                            | 1                                                                                         |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| nitric acid (7697-37-2)                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Short time value [mg/m <sup>3</sup> ]      | 2,6 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Short time value [ppm]                     | 1 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remark                                     | (КТВ) краткотрајна вредност (КТВ) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покусо време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m <sup>3</sup> или во ml/m <sup>3</sup> (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (EU) European Union – гранична вредност, определена на ниво на Европската унија; (*) дополнување на граничната вредност заради донесената Директива на Комисијата 2006/15ES од 7 февруари 2006 за создавање на втора листа на индикативни гранични вредности за професионална изложеност според директивата 98/24/ЕС и за измените на директивата 91/322/ЕЕС и директивата 2000/39/ ЕС (Сл. весник бр. 38 од ден 9.2.2006, стр. 36) |
| Regulatory reference                       | Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Switzerland - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                 | Acide nitrique / Salpetersäure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| MAK (OEL TWA)                              | 5 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                            | 2 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| KZGW (OEL STEL)                            | 5 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                            | 2 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remark                                     | NIOSH, OSHA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                       | www.suva.ch, 01.01.2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| USA - ACGIH - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                 | Nitric acid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| ACGIH OEL TWA                              | 2 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ACGIH OEL STEL                             | 4 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remark (ACGIH)                             | TLV® Basis: URT & eye irr; dental erosion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                       | ACGIH 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| aluminium nitrate (13473-90-0)             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Austria - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                 | Aluminium (als Metall)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| MAK (OEL TWA)                              | 10 mg/m <sup>3</sup> (E)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| MAK (OEL STEL)                             | 20 mg/m <sup>3</sup> (E, 2x 60(Miw) min)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Regulatory reference                       | BGBl. II Nr. 156/2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| aluminium nitrate (13473-90-0)               |                                                                                                                                                                                     |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Belgium - Occupational Exposure Limits       |                                                                                                                                                                                     |
| Local name                                   | Aluminium (sels solubles) (en Al) # Aluminiumzouten (oplosbaar) (als Al)                                                                                                            |
| OEL TWA                                      | 2 mg/m³                                                                                                                                                                             |
| Regulatory reference                         | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                          |
| Bulgaria - Occupational Exposure Limits      |                                                                                                                                                                                     |
| Local name                                   | Алуминий                                                                                                                                                                            |
| OEL TWA                                      | 10 mg/m³ (метален прах и оксиди). (инхалабилна фракция)<br>1,5 mg/m³ (метален прах и оксиди). (респирабилна фракция)<br>2 mg/m³ (неорганични разтворими съединения (като алуминий)) |
| Regulatory reference                         | Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)   |
| Croatia - Occupational Exposure Limits       |                                                                                                                                                                                     |
| Local name                                   | Aluminij                                                                                                                                                                            |
| GVI (OEL TWA)                                | 10 mg/m³ U (ukupna prašina)<br>4 mg/m³ R (respirabilna prašina)                                                                                                                     |
| Regulatory reference                         | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граниčnim vrijednostima izloženosti i biološkim граниčnim vrijednostima (NN 148/2023)                      |
| Denmark - Occupational Exposure Limits       |                                                                                                                                                                                     |
| Local name                                   | Aluminium, opløselige salte                                                                                                                                                         |
| OEL TWA                                      | 1 mg/m³ beregnet som Al                                                                                                                                                             |
| Regulatory reference                         | BEK nr 291 af 19/03/2024                                                                                                                                                            |
| Estonia - Occupational Exposure Limits       |                                                                                                                                                                                     |
| Local name                                   | Alumiinium, metalliline jaoksiidid                                                                                                                                                  |
| OEL TWA                                      | 10 mg/m³ kogu tolm (respireeritav fraktsioon)<br>4 mg/m³ peentolm (respireeritav fraktsioon)                                                                                        |
| Remark                                       | 1 (Peentolm koosneb alla 2,5-mikromeetrise läbimõõduga osakestest, mis võivad koos sissehingatava õhuga jõuda kopsualveoolidesse)                                                   |
| Regulatory reference                         | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                                        |
| France - Occupational Exposure Limits        |                                                                                                                                                                                     |
| Local name                                   | Aluminium                                                                                                                                                                           |
| VME (OEL TWA)                                | 10 mg/m³ (métal)<br>5 mg/m³ (pulvérulent)                                                                                                                                           |
| Remark                                       | Valeurs recommandées/admises                                                                                                                                                        |
| Regulatory reference                         | Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)                                                                                                              |
| Germany - Biological limit values (TRGS 903) |                                                                                                                                                                                     |
| Local name                                   | Aluminium                                                                                                                                                                           |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| aluminium nitrate (13473-90-0)                |                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Biological limit value                        | 50 µg/g creatinine Parameter: Aluminium - Untersuchungsmaterial: U = Urin - Probenahmezeitpunkt: c) am Schichtende, bei Langzeitexposition nach mehreren vorangegangenen Schichten - Festlegung/Begründung: 11/2018 DFG                                                                                                                                                                 |
| Regulatory reference                          | TRGS 903                                                                                                                                                                                                                                                                                                                                                                                |
| Greece - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | Αργίλιο μεταλλικό & οξείδιο του αργιλίου                                                                                                                                                                                                                                                                                                                                                |
| OEL TWA                                       | 10 mg/m <sup>3</sup> αναπν.<br>5 mg/m <sup>3</sup> εισπν.                                                                                                                                                                                                                                                                                                                               |
| Regulatory reference                          | Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους                                                                                                                                                                                                                                                 |
| Hungary - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | ALUMINIUM (oldható, AL-ra számolva)                                                                                                                                                                                                                                                                                                                                                     |
| AK (OEL TWA)                                  | 1 mg/m <sup>3</sup> respirábilis frakció                                                                                                                                                                                                                                                                                                                                                |
| Remark                                        | N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)                                                                                                                                                                                                                                                                                               |
| Regulatory reference                          | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                                                                        |
| Ireland - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | Aluminium salts, soluble                                                                                                                                                                                                                                                                                                                                                                |
| OEL TWA                                       | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                     |
| Remark                                        | Advisory OELV (Advisory Occupational Exposure Limit Values)                                                                                                                                                                                                                                                                                                                             |
| Regulatory reference                          | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                                                                                                                                   |
| Sweden - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | Aluminium, lösliga föreningar (som Al)                                                                                                                                                                                                                                                                                                                                                  |
| NGV (OEL TWA)                                 | 1 mg/m <sup>3</sup> totaldamm                                                                                                                                                                                                                                                                                                                                                           |
| Remark                                        | 3 (Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i Metodserien, Provtagning av totaldamm och respirabelt damm, Metod nr 1010, Arbetarskyddsstyrelsen, numera Arbetsmiljöverket. Filterdiameteren är normalt 37 mm, men kan även vara 25 mm. Trots sitt namn provtas inte den totala mängden luftburna partiklar med denna metod) |
| Regulatory reference                          | Hygieniska gränsvärden (AFS 2018:1)                                                                                                                                                                                                                                                                                                                                                     |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | Aluminium                                                                                                                                                                                                                                                                                                                                                                               |
| WEL TWA (OEL TWA)                             | 2 mg/m <sup>3</sup> alkyl compounds<br>2 mg/m <sup>3</sup> salts, soluble<br>10 mg/m <sup>3</sup> metal, inhalable dust<br>4 mg/m <sup>3</sup> metal, respirable dust                                                                                                                                                                                                                   |
| Regulatory reference                          | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                                   |
| Norway - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | Aluminiumløselige salter (beregnet som Al)                                                                                                                                                                                                                                                                                                                                              |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| aluminium nitrate (13473-90-0)                |                                                                                                                                                                                                                                                                                                                                                                            |
| Grenseverdi (OEL TWA)                         | 2 mg/m³                                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                          | FOR-2024-04-05-581                                                                                                                                                                                                                                                                                                                                                         |
| Switzerland - BAT                             |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Aluminium métal / Aluminium (Metall)                                                                                                                                                                                                                                                                                                                                       |
| BAT                                           | 50 µg/g creatinine (0.21 µmol/mmol cr.; Paramètre biologique: Aluminium; Substrat d'examen: Urine; Moment du prélèvement: Exposition de longue durée: après plusieurs périodes de travail.) / (0.21 µmol/mmol cr.; Biologischer Parameter: Aluminium; Untersuchungsmaterial: Urin; Probennahmezeitpunkt: Bei Langzeitexposition: nach mehreren vorangegangenen Schichten.) |
| Regulatory reference                          | Ordonnance 832.30 (OPA), article 50 al. 3, www.suva.ch/valeurs-limites / Verordnung 832.30 (VUV), Art. 50 Abs. 3, www.suva.ch/grenzwerte                                                                                                                                                                                                                                   |
| ammonium metavanadate (7803-55-6)             |                                                                                                                                                                                                                                                                                                                                                                            |
| Austria - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Vanadium                                                                                                                                                                                                                                                                                                                                                                   |
| MAK (OEL TWA)                                 | 0,5 mg/m³                                                                                                                                                                                                                                                                                                                                                                  |
| MAK (OEL STEL)                                | 1 mg/m³                                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                          | BGBl. II Nr. 156/2021                                                                                                                                                                                                                                                                                                                                                      |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Vanad (prach)                                                                                                                                                                                                                                                                                                                                                              |
| PEL (OEL TWA)                                 | 0,05 mg/m³                                                                                                                                                                                                                                                                                                                                                                 |
| NPK-P (OEL C)                                 | 0,15 mg/m³                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                                                                                                                                                                                                                      |
| Netherlands - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Vanadiumoxiden                                                                                                                                                                                                                                                                                                                                                             |
| TGG-8u (OEL TWA)                              | 0,01 mg/m³ (als V)                                                                                                                                                                                                                                                                                                                                                         |
| TGG-15min (OEL STEL)                          | 0,03 mg/m³ (als V)                                                                                                                                                                                                                                                                                                                                                         |
| Regulatory reference                          | Arbeidsomstandighedenregeling 2024                                                                                                                                                                                                                                                                                                                                         |
| Slovenia - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | vanadij                                                                                                                                                                                                                                                                                                                                                                    |
| OEL TWA                                       | 0,5 mg/m³                                                                                                                                                                                                                                                                                                                                                                  |
| OEL STEL                                      | 0,005 mg/m³<br>0,03 mg/m³                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                        | Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti)                                                                                                                                                                                                                                                                           |
| Regulatory reference                          | Uradni list RS, št. 29/2024 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu                                                                                                                                                                                                                               |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ammonium metavanadate (7803-55-6)</b>               |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Norway - Occupational Exposure Limits</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                             | Vanadium                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Grenseverdi (OEL TWA)                                  | 0,05 mg/m³ Røyk beregnet som V<br>0,2 mg/m³ Støv (beregnet som V)                                                                                                                                                                                                                                                                                                                                                                |
| Takverdi (OEL C)                                       | 0,05 mg/m³ Røyk (beregnet som V)                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                                   | FOR-2024-04-05-581                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>arsenic acid (7778-39-4)</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>EU - Binding Occupational Exposure Limit (BOEL)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                             | Arsenic acid and its salts, as well as inorganic arsenic compounds                                                                                                                                                                                                                                                                                                                                                               |
| BOEL TWA                                               | 0,01 mg/m³ (Inhalable fraction)                                                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                                   | DIRECTIVE (EU) 2019/983 (amending Directive 2004/37/EC)                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Austria - Occupational Exposure Limits</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                             | Arsensäure und deren Salze: Arsensäure                                                                                                                                                                                                                                                                                                                                                                                           |
| TRK (OEL TWA)                                          | 0,01 mg/m³ (als As berechnet, E)                                                                                                                                                                                                                                                                                                                                                                                                 |
| TRK (OEL STEL)                                         | 0,04 mg/m³ (als As berechnet, E, 4x 15(Miw) min)                                                                                                                                                                                                                                                                                                                                                                                 |
| Remark                                                 | Krebserzeugend: III A1                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                                   | BGBl. II Nr. 156/2021                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Belgium - Occupational Exposure Limits</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                             | Arsenic, acide arsénique et ses sels, ainsi que ses composés inorganiques (en As) # Arseen, arseenzuur en zouten daarvan, alsook anorganische arseenverbindingen (als As)                                                                                                                                                                                                                                                        |
| OEL TWA                                                | 0,01 mg/m³ (Arsenic et ses composés inorganiques (en As); Belgium; Time-weighted average exposure limit 8 h)                                                                                                                                                                                                                                                                                                                     |
| Remark                                                 | C: la mention "C" signifie que l'agent en question relève du champ d'application du titre 2 relatif aux agents cancérogènes, mutagènes et reprotoïques du livre VI du code de bien-être au travail. # C: de vermelding "C" betekent dat het betrokken agens valt onder het toepassingsgebied van titel 2 betreffende kankerverwekkende, mutagene en reprotoxische agentia van boek VI van de codex over het welzijn op het werk. |
| Regulatory reference                                   | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Croatia - Occupational Exposure Limits</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                             | Arsen i drugi arsenovi spojevi (izuzev arsina)                                                                                                                                                                                                                                                                                                                                                                                   |
| GVI (OEL TWA)                                          | 0,1 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Regulatory reference                                   | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)                                                                                                                                                                                                                                                                   |
| <b>Croatia - Biological limit values</b>               |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                             | Arsen (elementaran i anorgansk spojevi)                                                                                                                                                                                                                                                                                                                                                                                          |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| arsenic acid (7778-39-4)                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BLV                                               | 0,93 µmol/l Karakteristični pokazatelj: arsen - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju smjene ili mokraća skupljena tijekom 24 sata - Napomena: hrana bogata živim namirnicama iz mora značajno povisuje nalaz<br>70 µg/l Karakteristični pokazatelj: arsen - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju smjene ili mokraća skupljena tijekom 24 sata - Napomena: hrana bogata živim namirnicama iz mora značajno povisuje nalaz |
| Regulatory reference                              | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 91/2018)                                                                                                                                                                                                                                                                                                    |
| Czech Republic - Biological limit values          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                        | Arsen                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| BLV                                               | 0,05 mg/g creatinine Ukazatel: Arsen - Biologicky vzorek: moči - Doba odběru: konec pracovního týdne<br>0,075 µmol/mmol Creatinine Ukazatel: Arsen - Biologicky vzorek: moči - Doba odběru: konec pracovního týdne                                                                                                                                                                                                                                               |
| Regulatory reference                              | Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)                                                                                                                                                                                                                                                                                                                                                                                               |
| Denmark - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                        | Arsen og uorganiske forbindelser                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OEL TWA                                           | 0,0028 mg/m³ beregnet som As                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remark                                            | E (betyder, at stoffet har en EU-grænseværdi); K (betyder, at stoffet anses for at kunne være kræftfremkaldende)                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                              | BEK nr 291 af 19/03/2024                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Estonia - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                        | Arseen ja anorgaanilised ühendid, v.a arseenhüdroid (arvutatud arseenile)                                                                                                                                                                                                                                                                                                                                                                                        |
| OEL TWA                                           | 0,03 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Remark                                            | C (Kantserogeenne aine), 3 (Väaveldioksiid tugevdab arseeni kantserogeenseid omadusi), 4 (Uute tootmisüksuste loomisel ja vanade rekonstrueerimisel on soovitatav arvestada arseeni ja selle anorgaaniliste ühendite piinormiks tööpäeva jooksul 0,01 mg/m³ (arvutatud arseenile))                                                                                                                                                                               |
| Regulatory reference                              | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                                                                                                                                                                                                                                                                                                                     |
| Finland - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                        | Arseeni                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| HTP (OEL TWA)                                     | 0,01 mg/m³ As                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Finland - Biological limit values                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                        | Arseeni                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| BLV                                               | 70 nmol/l Parametri: Virtsan epäorgaaninen arseen - Näytteenottoajankohta: Työväiheen tai työvuoron päätyttyä työviikon tai altistumisjakson loputtua                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Germany - Occupational Exposure Limits (TRGS 910) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                        | Arsenverbindungen, als Carc. 1A, Carc. 1B eingestuft                                                                                                                                                                                                                                                                                                                                                                                                             |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| arsenic acid (7778-39-4)                       |                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acceptable concentration (Weight conc.)        | 0,83 µg/m³ (E)                                                                                                                                                                                                                                                                                            |
| Notes                                          | b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000                                                                                                                                                                                                                                                   |
| Tolerance concentration (Weight conc.)         | 8,3 µg/m³ (E)                                                                                                                                                                                                                                                                                             |
| Tolerance concentration excess factor          | 8                                                                                                                                                                                                                                                                                                         |
| Remark                                         | (4) Die Konzentrationen beziehen sich auf den Elementgehalt des entsprechenden Metalls.; Siehe TRGS 561                                                                                                                                                                                                   |
| Equivalence value for acceptable concentration | 14 µg/l                                                                                                                                                                                                                                                                                                   |
| Equivalence value for tolerance concentration  | 40 µg/l                                                                                                                                                                                                                                                                                                   |
| Parameter                                      | Σ Arsen(III), Arsen(V), Monomethylarsonsäure und Dimethylarsinsäure                                                                                                                                                                                                                                       |
| Testing material                               | U - Urin                                                                                                                                                                                                                                                                                                  |
| Testing time                                   | b - Expositionsende bzw. Schichtende, c - Bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten                                                                                                                                                                                  |
| Regulatory reference                           | TRGS 910                                                                                                                                                                                                                                                                                                  |
| Hungary - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                           |
| Local name                                     | ARZÉN ÉS SZERVETLEN VEGYÜLETEI (arzin kivételével), (As-ra számítva)                                                                                                                                                                                                                                      |
| AK (OEL TWA)                                   | 0,01 mg/m³                                                                                                                                                                                                                                                                                                |
| Remark                                         | k(1A) (rákkeltő), b (Bőrön át is felszívódik), i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát), BEM (biológiai expozíciós mutató); EU7 (2019/983/EU irányelvben közölt érték); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik) |
| Regulatory reference                           | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                          |
| Hungary - Biological Exposure Indices          |                                                                                                                                                                                                                                                                                                           |
| Local name                                     | Arzén                                                                                                                                                                                                                                                                                                     |
| BEI                                            | 0,05 mg/l Biológiai expozíciós (hatás) mutató: arzén - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén)<br>0,67 µmol/l Biológiai expozíciós (hatás) mutató: arzén - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén)                                                |
| Regulatory reference                           | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                          |
| Ireland - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                           |
| Local name                                     | Arsenic acid and its salts                                                                                                                                                                                                                                                                                |
| OEL TWA                                        | 0,01 mg/m³ I (Inhalable Fraction)                                                                                                                                                                                                                                                                         |
| Remark                                         | BOELV (Binding Occupational Exposure Limit Values), Carc. 1A (Substances known to have carcinogenic potential for humans)                                                                                                                                                                                 |
| Regulatory reference                           | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                                                     |
| Ireland - Biological limit values              |                                                                                                                                                                                                                                                                                                           |
| Local name                                     | Arsenic, elemental and soluble inorganic compounds                                                                                                                                                                                                                                                        |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| arsenic acid (7778-39-4)                   |                                                                                                                                                               |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BMGV                                       | 35 µg/l Parameter: Inorganic As plus methylated metabolites - Medium: urine - Notations: B (Background)                                                       |
| Regulatory reference                       | Biological Monitoring Guidelines (HSA, 2011)                                                                                                                  |
| Italy - Occupational Exposure Limits       |                                                                                                                                                               |
| Local name                                 | Acido arsenico e i suoi sali e composti inorganici dell'arsenico                                                                                              |
| OEL TWA                                    | 0,01 mg/m³ Frazione inalabile                                                                                                                                 |
| Regulatory reference                       | Allegato XLIII del Decreto Legislativo 4 settembre 2024, n. 135 - Protezione da agenti cancerogeni, mutageni o da sostanze tossiche per la riproduzione       |
| Lithuania - Occupational Exposure Limits   |                                                                                                                                                               |
| Local name                                 | Arseno rūgštis ir jos druskos, taip pat neorganiniai arseno junginiai                                                                                         |
| IPRV (OEL TWA)                             | 0,01 mg/m³ (įkvepiamoji frakcija)<br>0,03 mg/m³ (Vario lydymo sektoriuje)                                                                                     |
| Remark                                     | K (kancerogeninis poveikis); Kai kurie duomenys rodo, kad sieros dioksidas gali sustiprinti kancerogenines arseno savybes.                                    |
| Regulatory reference                       | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-1203/A1-64, 2019-10-24)                                                                                             |
| Netherlands - Occupational Exposure Limits |                                                                                                                                                               |
| Local name                                 | Arseen                                                                                                                                                        |
| TGG-8u (OEL TWA)                           | 0,28 µg/m³                                                                                                                                                    |
| Remark                                     | Kankerverwekkende stof                                                                                                                                        |
| Regulatory reference                       | Arbeidsomstandighedenregeling 2024                                                                                                                            |
| Poland - Occupational Exposure Limits      |                                                                                                                                                               |
| Local name                                 | Arsen i jego związki nieorganiczne                                                                                                                            |
| NDS (OEL TWA)                              | 0,01 mg/m³ w przeliczeniu na As – frakcja wdychalna                                                                                                           |
| Remark                                     | Frakcja wdychalna – frakcja aerozolu wnikaćca przez nos i usta, która stwarza zagrożenie dla zdrowia po zdeponowaniu w drogach oddechowych.                   |
| Regulatory reference                       | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                                        |
| Portugal - Occupational Exposure Limits    |                                                                                                                                                               |
| Local name                                 | Arsénio e compostos inorgânicos, expressos em As                                                                                                              |
| OEL TWA                                    | 0,01 mg/m³                                                                                                                                                    |
| Remark                                     | A1 (Agente carcinogénico confirmado no Homem); IBE (Índice biológico de exposição)                                                                            |
| Regulatory reference                       | Norma Portuguesa NP 1796:2014                                                                                                                                 |
| Portugal - Biological Exposure Indices     |                                                                                                                                                               |
| Local name                                 | Arsenio, elemento e compostos inorgânicos solúveis (exclui arseniato de gálio e arsina)                                                                       |
| BEI                                        | 35 µg As/L Parâmetro: Arsénio inorgânico e metabolitos metilados - Meio: urina - Momento da amostragem: Fim da semana de trabalho - Notação: Vb (Valor basal) |
| Regulatory reference                       | Norma Portuguesa NP 1796:2014                                                                                                                                 |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| arsenic acid (7778-39-4)                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Slovenia - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                    | arzenova kislina (As <sub>2</sub> O <sub>5</sub> ) in njene soli ter anorganske arzenove spojine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OEL TWA                                       | 0,01 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| OEL STEL                                      | 0,4 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Remark                                        | Rakotvorne snovi – kategorija 1A. EU, BAT (Biološka mejna vrednost), EKA (Zveza med koncentracijo rakotvornih snovi v zraku na delovnem mestu in količino snovi in/ali njenih metabolitov v organizmu)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                          | Uradni list RS, št. 29/2024 z dne 4.4.2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti rakotvornim ali mutagenim snovem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Spain - Occupational Exposure Limits          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                    | Arsénico elemental                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| VLA-ED (OEL TWA)                              | 0,01 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Remark                                        | VLB® (Agente químico que tiene Valor Límite Biológico), r (Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el "Reglamento (CE) nº 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos" (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido), s (Esta sustancia tiene prohibida total o parcialmente su comercialización y uso como fitosanitario y/o como biocida. Para una información detallada acerca de las prohibiciones consúltase: Base de datos de productos biocidas: <a href="http://www.msssi.gob.es/ciudadanos/productos.do?tipo=plaguicidas">http://www.msssi.gob.es/ciudadanos/productos.do?tipo=plaguicidas</a> Base de datos de productos fitosanitarios <a href="http://www.magrama.gob.es/agricultura/pags/fitos/registro/fichas/pdf/Lista_sa.pdf">http://www.magrama.gob.es/agricultura/pags/fitos/registro/fichas/pdf/Lista_sa.pdf</a> ). |
| Regulatory reference                          | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Spain - Biological limit values               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                    | Arsénico elemental                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| BLV                                           | 35 µg As/L Parámetro: Arsénico inorgánico más metabolitos metilados - Medio: Orina - Momento de muestreo: Final de la semana laboral - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                          | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                    | Arsenic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| WEL TWA (OEL TWA)                             | 0,1 mg/m <sup>3</sup> Arsenic and compounds except arsine (as As); United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Remark                                        | Carc (Capable of causing cancer and/or heritable genetic damage)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                          | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Iceland - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                    | Arsenik og ólífræn sambönd, sem As                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

| arsenic acid (7778-39-4)                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OEL TWA                                        | 0,01 mg/m³ sjá einnig arsín og kalsíumarsenat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                         | K (efnið er krabbameinsvaldandi). Vissar upplýsingar benda til að brennisteinsdíoxíð geti aukið krabbameinsvirkni arseníks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                           | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| North Macedonia - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                     | Арсенова киселина (As2O5) и нејзините соли                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OEL TWA                                        | 0,1 mg/m³ (l) инхалабилна фракција – дел на вкупно суспендирани материи, кои работникот ги вдишува                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| KTV                                            | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Short time value [mg/m³]                       | 0,4 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Remark                                         | (KTV) краткотрајна вредност (КТВ) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покусо време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m³ или во ml/m³(ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (TDK) техничко достигнување на концентрацијата – е дадено за канцерогените супстанции и значи концентрација на супстанции во воздухот на работното место, кои можат да се достигнат со достапните техники |
| Regulatory reference                           | Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Switzerland - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                     | Arsenic et ses composés inorg. / Arsen und anorganische Arsenverbindungen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MAK (OEL TWA)                                  | 0,01 mg/m³ (i) / (e)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Notation                                       | R, C1A, M2, B / H, C1A, M2, B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                         | HSE, NIOSH, BG. Exprimé en As / HSE, NIOSH, BG. Als As berechnet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                           | www.suva.ch, 01.01.2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Switzerland - BAT                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                     | Arsenic et ses composés inorg. / Arsen und anorganische Arsenverbindungen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| BAT                                            | 15 µg/l (200 nmol/l; Paramètre biologique: Arsenic inorganique et ses métabolites méthylés; Substrat d'examen: Urine; Moment du prélèvement: Fin de l'exposition, de la période de travail. Exposition de longue durée: après plusieurs périodes de travail.) / (200 nmol/l; Biologischer Parameter: ΣArsen(III), Arsen(V), Monomethylarsonsäure; Untersuchungsmaterial: Urin; Probennahmezeitpunkt: Expositionsende, bzw. Schichtende. Bei Langzeitexposition: nach mehreren vorangegangenen Schichten.)                                                                                                                                                                                                                                                                                                   |
| Regulatory reference                           | Ordonnance 832.30 (OPA), article 50 al. 3, www.suva.ch/valeurs-limites / Verordnung 832.30 (VUV), Art. 50 Abs. 3, www.suva.ch/grenzwerte                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

|                                                           |                                                                                                                                                  |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>arsenic acid (7778-39-4)</b>                           |                                                                                                                                                  |
| <b>USA - ACGIH - Occupational Exposure Limits</b>         |                                                                                                                                                  |
| Local name                                                | Arsenic and inorganic compounds, as As                                                                                                           |
| ACGIH OEL TWA                                             | 0,01 mg/m <sup>3</sup> (Arsenic, inorganic compounds (except Arsine), as As; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| Remark (ACGIH)                                            | TLV® Basis: Lung cancer. Notations: A1 (Confirmed Human Carcinogen); BEI                                                                         |
| Regulatory reference                                      | ACGIH 2024                                                                                                                                       |
| <b>beryllium nitrate (13597-99-4)</b>                     |                                                                                                                                                  |
| <b>EU - Indicative Occupational Exposure Limit (IOEL)</b> |                                                                                                                                                  |
| Local name                                                | Beryllium                                                                                                                                        |
| IOEL TWA                                                  | 0,0002 mg/m <sup>3</sup> (BOEL. Inhalable fraction)                                                                                              |
|                                                           | 0,0006 mg/m <sup>3</sup> (Limit value until 11 July 2026)                                                                                        |
|                                                           | 0,02 µg/m <sup>3</sup> (inhalable fraction)                                                                                                      |
| IOEL STEL                                                 | 0,2 µg/m <sup>3</sup> (inhalable fraction)                                                                                                       |
| Remark                                                    | Dermal and respiratory sensitisation<br>Sensitisation (dermal and respiratory). (Year of adoption 2017)                                          |
| Regulatory reference                                      | DIRECTIVE (EU) 2019/983 (amending Directive 2004/37/EC)<br>SCOEL Recommendations                                                                 |
| <b>EU - Binding Occupational Exposure Limit (BOEL)</b>    |                                                                                                                                                  |
| Local name                                                | Beryllium                                                                                                                                        |
| BOEL TWA                                                  | 0,0002 mg/m <sup>3</sup> (Inhalable fraction)                                                                                                    |
|                                                           | 0,0006 mg/m <sup>3</sup> (Limit value until 11 July 2026)                                                                                        |
| Notes                                                     | Dermal and respiratory sensitisation (The substance can cause sensitisation of the skin and of the respiratory tract)                            |
| Regulatory reference                                      | DIRECTIVE (EU) 2019/983 (amending Directive 2004/37/EC)                                                                                          |
| <b>EU - Biological Limit Value (BLV)</b>                  |                                                                                                                                                  |
| Local name                                                | Beryllium                                                                                                                                        |
| Regulatory reference                                      | SCOEL List of recommended health-based BLVs and BGVs                                                                                             |
| <b>Austria - Occupational Exposure Limits</b>             |                                                                                                                                                  |
| Local name                                                | Beryllium und seine Verbindungen                                                                                                                 |
| MAK (OEL TWA)                                             | 0,00002 mg/m <sup>3</sup> (als Be berechnet, E)                                                                                                  |
| MAK (OEL STEL)                                            | 0,0002 mg/m <sup>3</sup> (als Be berechnet, E, 4x 15(Miw) min)                                                                                   |
| TRK (OEL TWA)                                             | 0,0006 mg/m <sup>3</sup> (als Be berechnet, E)                                                                                                   |
| TRK (OEL STEL)                                            | 0,0024 mg/m <sup>3</sup> (als Be berechnet, E, 4x 15(Miw) min)                                                                                   |
| Remark                                                    | Sah. Krebs erzeugend: III A2                                                                                                                     |
| Regulatory reference                                      | BGBI. II Nr. 156/2021                                                                                                                            |
| <b>Belgium - Occupational Exposure Limits</b>             |                                                                                                                                                  |
| Local name                                                | Béryllium et ses composés (en Be) # Beryllium en -verbindingen (als Be)                                                                          |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| beryllium nitrate (13597-99-4)                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OEL TWA                                       | 0,002 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OEL STEL                                      | 0,01 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Remark                                        | C: La mention C signifie que l'agent en question relève du champ d'application de l'arrêté royal du 2 décembre 1993 concernant la protection des travailleurs contre les risques liés à l'exposition à des agents cancérigènes et mutagènes au travail. # De vermelding C betekent dat het betrokken agens valt onder het toepassingsgebied van het koninklijk besluit van 2 december 1993 betreffende de bescherming van de werknemers tegen de risico's van blootstelling aan kankerverwekkende en mutagene agentia op het werk |
| Regulatory reference                          | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Bulgaria - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                                    | Берилий                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OEL TWA                                       | 0,002 mg/m <sup>3</sup> и съединения (като берилий)                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                        | Кожна и дихателна сенсibilизация (Веществото може да предизвика сенсibilизация на кожата и на дихателните пътища)                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                          | Наредба № 10 от 26.09.2003 г. за защита на работещите от рискове, свързани с експозиция на канцерогени и мутагени при работа (изм. и доп. ДВ. бр. 28 от 2 Април 2024г.)                                                                                                                                                                                                                                                                                                                                                           |
| Croatia - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                                    | Berilij                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| GVI (OEL TWA)                                 | 0,002 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Remark                                        | T+ (vrlo otrovno); Karc. kat. 2 (tvari koje su vjerojatno karcinogene za ljude)                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)                                                                                                                                                                                                                                                                                                                                                                    |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                                    | Beryllium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| PEL (OEL TWA)                                 | 0,001 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| NPK-P (OEL C)                                 | 0,002 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Remark                                        | I - dráždí sliznice (oči, dýchací cesty) resp. kůži, K - karcinogen kategorie 1A a 1B (s větou H350, H350i), S - látka má senzibilizující účinek (s větou H317, H334), P - u látky nelze vyloučit závažné pozdní účinky (s větou H372, H373).                                                                                                                                                                                                                                                                                     |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Denmark - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                                    | Beryllium, pulver og forbindelser                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OEL TWA                                       | 0,001 mg/m <sup>3</sup> beregnet som Be                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Remark                                        | E (betyder, at stoffet har en EU-grænseværdi); K (betyder, at stoffet anses for at kunne være kræftfremkaldende). Hud- og luftvejssensibiliserende                                                                                                                                                                                                                                                                                                                                                                                |
| Regulatory reference                          | BEK nr 291 af 19/03/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Estonia - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                                    | Berüllium ja berülliumi anorgaanilised ühendid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| beryllium nitrate (13597-99-4)                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OEL TWA                                           | 0,0002 mg/m <sup>3</sup> Sissehingataav fraktsioon (kehtib alates 11.07.2026)<br>0,0006 mg/m <sup>3</sup> (kehtib kuni 10.07.2026)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Remark                                            | C (Kantserogeenne aine), S (Sensibiliseeriv aine), 6 (Metalliline berüllium ei ole sensibiliseeriv)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Regulatory reference                              | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Finland - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Local name                                        | Beryllium, metalli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| HTP (OEL TWA)                                     | 0,0001 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| HTP (OEL STEL)                                    | 0,0004 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Remark                                            | lho                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Germany - Occupational Exposure Limits (TRGS 900) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Local name                                        | Beryllium und seine anorganischen Verbindungen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| AGW (OEL TWA)                                     | 0,00006 mg/m <sup>3</sup> (A)<br>0,00014 mg/m <sup>3</sup> (E)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Peak exposure limitation factor                   | 1(I)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Remark                                            | AGS - Ausschuss für Gefahrstoffe; X - Krebserzeugender Stoff der Kat. 1A oder 1B oder krebserzeugende Tätigkeit oder Verfahren nach § 2 Absatz 3 Nr. 4 der Gefahrstoffverordnung – es ist zusätzlich § 10 GefStoffV zu beachten; 10 - Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Regulatory reference                              | TRGS900                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Hungary - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Local name                                        | BERILLIUM ÉS VEGYÜLETEI (Be-ra számítva)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| AK (OEL TWA)                                      | 0,0006 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Remark                                            | k(1B) (rákkeltő), b (Bőrön át is felszívódik); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                              | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Ireland - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Local name                                        | Beryllium and beryllium compounds (as Be)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| OEL TWA                                           | 0,0002 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Remark                                            | BOELV (Binding Occupational Exposure Limit Values), Sens (In the workplace, respiratory or dermal exposures to sensitising agents may occur. Sensitisers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The “sens” notation alone does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitisers present special problems in the workplace. Should an employee become sensitised, subsequent exposure may cause intense responses, even at low exposure concentrations well below the OELV. Exposure should be eliminated or significantly reduced through control measures such as engineering and process controls and use of personal protective equipment (PPE)) |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| beryllium nitrate (13597-99-4)          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                    | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Poland - Occupational Exposure Limits   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                              | Beryl i jego związki nieorganiczne w przeliczeniu na Be                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NDS (OEL TWA)                           | 0,0002 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                  | Substancja może mieć działanie uczulające na skórę i układ oddechowy. Frakcja wdychalna – frakcja aerozolu wnikająca przez nos i usta, która stwarza zagrożenie dla zdrowia po zdeponowaniu w drogach oddechowych.                                                                                                                                                                                                                                                                                                                                                                                                         |
| Regulatory reference                    | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Portugal - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                              | Berílio e compostos, expressos em Be                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| OEL TWA                                 | 0,00005 mg/m³ I (Fração inalável)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remark                                  | A1 (Agente carcinogénico confirmado no Homem). Compostos solúveis: P, SC. Compostos solúveis e insolúveis: SR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                    | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Romania - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                              | Beriliu și compuși (exprimați în Be)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| OEL TWA                                 | 0,002 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Slovenia - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                              | berilij in anorganske berilijeve spojine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| OEL TWA                                 | 0,0002 mg/m³<br>0,0006 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                  | Rakotvorne snovi – kategorija 1B. EU, SK (Snov lahko povzroči preobčutljivost kože), SD (Snov lahko povzroči preobčutljivost dihalnih poti)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Regulatory reference                    | Uradni list RS, št. 29/2024 z dne 4.4.2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti rakotvornim ali mutagenim snovem                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Spain - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                              | Berilio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| VLA-ED (OEL TWA)                        | 0,0002 mg/m³ elemental<br>0,0002 mg/m³ Compuestos de berilio, como Be, excepto los expresamente indicados                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                  | Sen (Sensibilizante. Véase Apartado 6), r (Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el “Reglamento (CE) nº 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos” (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido). |
| Regulatory reference                    | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Sweden - Occupational Exposure Limits   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                              | Beryllium, och föreningar (som Be)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| beryllium nitrate (13597-99-4)                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NGV (OEL TWA)                                  | 0,002 mg/m³ totaldamm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Remark                                         | C (Ämnet är cancerframkallande. Risk för cancer finns även vid annan exponering än via inandning. För vissa cancerframkallande ämnen som inte har gränsvärden gäller förbud eller tillståndskrav enligt föreskrifterna om kemiska arbetsmiljörisker); S (Ämnet är sensibiliserande. Sensibiliserande ämnen kan ge allergi eller annan överkänslighet. Överkänslighetsbesvärerna drabbar främst huden eller andningsorganen. Överkänslighet innebär att man reagerar vid kontakt med ämnen som normalt inte ger besvär. Allergi är en undergrupp av överkänslighet som orsakas av reaktioner i kroppens immunsystem. Särskilt låga gränsvärden har fastställts för ämnen med mer uttalat luftvägssensibiliserande egenskaper. Några ämnen med starkt sensibiliserande egenskaper får endast hanteras efter tillstånd från Arbetsmiljöverket, se föreskrifterna om kemiska arbetsmiljörisker. Dessa ämnen har inga gränsvärden men i vissa fall riktvärden); 3 (Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i Metodserien, Provtagning av totaldamm och respirabelt damm, Metod nr 1010, Arbetarskyddsstyrelsen, numera Arbetsmiljöverket. Filterdiametern är normalt 37 mm, men kan även vara 25 mm. Trots sitt namn provtas inte den totala mängden luftburna partiklar med denna metod) |
| Regulatory reference                           | Hygieniska gränsvärden (AFS 2020:6)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| United Kingdom - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                                     | Beryllium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| WEL TWA (OEL TWA)                              | 0,002 mg/m³ Beryllium compounds (as Be); United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Remark                                         | Carc (Capable of causing cancer and/or heritable genetic damage. See paragraphs 49–51)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                           | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Iceland - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                                     | Beryllíum og ólífræn beryllíum efna-sambönd, reiknað sem beryllíum (Be)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OEL TWA                                        | 0,0006 mg/m³ örfínt ryk (gildir til 11. júlí 2026)<br>0,0002 mg/m³ örfínt ryk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remark                                         | H (efnið getur auðveldlega borist inn í líkamann gegnum húð), K (efnið er krabbameinsvaldandi). Ertir öndunarfæri                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                           | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 1137/2020)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| North Macedonia - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                                     | Берилиум и неговите соединенија освен алуминиум берилиум силикат и оние што се утврдени други места во овој анекс                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OEL TWA                                        | 0,005 mg/m³ мелење; (I) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува<br>0,002 mg/m³ друго; (I) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| KTV                                            | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Short time value [mg/m³]                       | 0,02 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

| beryllium nitrate (13597-99-4)             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                     | (КТВ) краткотрајна вредност (КТВ) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покусно време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m <sup>3</sup> или во ml/m <sup>3</sup> (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (TDK) техничко достигнување на концентрацијата – е дадено за канцерогените супстанции и значи концентрација на супстанции во воздухот на работното место, кои можат да се достигнат со достапните техники |
| Regulatory reference                       | Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| USA - ACGIH - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                 | Beryllium and compounds, as Be                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ACGIH OEL TWA                              | 0,00005 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Remark (ACGIH)                             | Beryllium sens; chronic beryllium; Skin; DSEN; RSEN; A1 (Confirmed Human Carcinogen: The agent is carcinogenic to humans based on the weight of evidence from epidemiologic studies)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                       | ACGIH 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| cobalt dinitrate (10141-05-6)              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Austria - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                 | Cobalt und seine Verbindungen (Cobalt als Cobaltmetall, Cobaltoxid, Cobaltsulfid und Cobaltsulfat, Staub von Cobaltlegierungen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| TRK (OEL TWA)                              | 0,5 mg/m <sup>3</sup> (Herstellung von Cobaltpulver und Katalysatoren, Hartmetallund) (als Co berechnet, E)<br>0,1 mg/m <sup>3</sup> (im übrigen) (als Co berechnet, E)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| TRK (OEL STEL)                             | 2 mg/m <sup>3</sup> (Herstellung von Cobaltpulver und Katalysatoren, Hartmetallund) (als Co berechnet, E, 4x 15(Miw) min)<br>0,4 mg/m <sup>3</sup> (im übrigen) (als Co berechnet, E, 4x 15(Miw) min)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Remark                                     | H, Sah. Krebs erzeugend: III A2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Regulatory reference                       | BGBI. II Nr. 156/2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Austria - Biological limit values          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                 | Cobalt und seine Verbindungen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| BLV                                        | 10 µg/l Parameter: Cobalt - Untersuchungsmaterial: Harn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| cobalt dinitrate (10141-05-6)                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                        | Eignung mit vorzeitiger Folgeuntersuchung: Überschreiten des Grenzwertes für Cobalt im Harn. Bei Vorliegen einer wesentlichen Beeinträchtigung der Lungenfunktion. Diese liegt vor, wenn nach mehrmaliger Messung der beste gemessene Wert den für den/die Untersuchte/n maßgebenden Sollwert um 20% unterschreitet, bzw. den MEF50-Sollwert um 50% unterschreitet. Eine vorzeitige Folgeuntersuchung ist jedoch nicht erforderlich, wenn im Vergleich zu Vorbefunden der altersabhängige physiologische Abfall der 1 Sekundenkapazität (FEV1) von 40 ml/Jahr nicht überschritten wird oder aus der Beurteilung des Kurvenverlaufes der Forcierten Vitalkapazität (FVC) eine eingeschränkte Mitarbeit des Untersuchten/der Untersuchten ersichtlich ist.<br>Der Zeitabstand zwischen den Untersuchungen beträgt bei Eignung: ein Jahr, bei Eignung mit vorzeitiger Folgeuntersuchung: sechs Monate. |
| Regulatory reference                          | Verordnung über die Gesundheitsüberwachung am Arbeitsplatz 2017 (VGÜ 2017)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Belgium - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Local name                                    | Cobalt métal (fumées et poussières) (en Co) # Kobaltmetaal (stof en rook) als Co                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| OEL TWA                                       | 0,02 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                          | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Bulgaria - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Local name                                    | Кобалт                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OEL TWA                                       | 0,1 mg/m <sup>3</sup> (и неорганични съединения (като кобалт))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                          | Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Croatia - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Local name                                    | Kobalt i spojevi (kao Co)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| GVI (OEL TWA)                                 | 0,1 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                        | Алерген (кожа (tvar koja može izazvati alergijsku reakciju na koži (H317)) i udisanje (tvar koja udisanjem može izazvati simptome alergije ili astme ili poteškoće s disanjem (H334)))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граничним vrijednostima izloženosti i biološkim граничним vrijednostima (NN 148/2023)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Local name                                    | Kobalt a jeho sloučeniny, jako Co                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| PEL (OEL TWA)                                 | 0,05 mg/m <sup>3</sup> (V - vdechovatelná frakce aerosolu)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| NPK-P (OEL C)                                 | 0,1 mg/m <sup>3</sup> (V - vdechovatelná frakce aerosolu)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Remark                                        | S - látka má senzibilizující účinek (s větou H317, H334), K - karcinogen kategorie 1A a 1B (s větou H350, H350i), T - toxická pro reprodukci kategorie 1A a 1B (s větou H360 včetně příslušných kódů).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Denmark - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Local name                                    | Cobalt, pulver, støv, røg og uorganiske forbindelser                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| OEL TWA                                       | 0,01 mg/m <sup>3</sup> beregnet som Co                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |



**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| cobalt dinitrate (10141-05-6)                     |                                                                                                                                            |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                            | K (betyder, at stoffet anses for at kunne være kræftfremkaldende)                                                                          |
| Regulatory reference                              | BEK nr 291 af 19/03/2024                                                                                                                   |
| Estonia - Occupational Exposure Limits            |                                                                                                                                            |
| Local name                                        | Koobalt ja anorgaanilised ühendid (arvutatud koobaltile)                                                                                   |
| OEL TWA                                           | 0,05 mg/m <sup>3</sup>                                                                                                                     |
| Remark                                            | S (Sensibiliseeriv aine)                                                                                                                   |
| Regulatory reference                              | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                               |
| Finland - Occupational Exposure Limits            |                                                                                                                                            |
| Local name                                        | Koboltti ja sen epäorgaaniset yhdisteet                                                                                                    |
| HTP (OEL TWA)                                     | 0,02 mg/m <sup>3</sup> Co                                                                                                                  |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                            |
| Finland - Biological limit values                 |                                                                                                                                            |
| Local name                                        | Koboltti ja sen epäorgaaniset yhdisteet                                                                                                    |
| BLV                                               | 130 nmol/l Parametri: Virtsan koboltti - Näytteenottoajankohta: Työvaiheen tai työvuoron päätyttyä työviikon tai altistumisjakson loputtua |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                            |
| Germany - Occupational Exposure Limits (TRGS 910) |                                                                                                                                            |
| Local name                                        | Cobalt und Cobaltverbindungen, als Carc.1A, Carc.1B eingestuft                                                                             |
| Acceptable concentration (Weight conc.)           | 0,5 µg/m <sup>3</sup> (A)                                                                                                                  |
| Notes                                             | b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000                                                                                    |
| Tolerance concentration (Weight conc.)            | 5 µg/m <sup>3</sup> (A)                                                                                                                    |
| Tolerance concentration excess factor             | 8                                                                                                                                          |
| Remark                                            | (4) Die Konzentrationen beziehen sich auf den Elementgehalt des entsprechenden Metalls.; Siehe TRGS 561                                    |
| Regulatory reference                              | TRGS 910                                                                                                                                   |
| Greece - Occupational Exposure Limits             |                                                                                                                                            |
| Local name                                        | Κοβάλτιο μεταλλικό (σκόνη και καπνοί)                                                                                                      |
| OEL TWA                                           | 0,1 mg/m <sup>3</sup>                                                                                                                      |
| Regulatory reference                              | Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους    |
| Hungary - Occupational Exposure Limits            |                                                                                                                                            |
| Local name                                        | KOBALT ÉS SZERVETLEN VEGYÜLETEI (Co-ra számítva)                                                                                           |
| AK (OEL TWA)                                      | 0,02 mg/m <sup>3</sup>                                                                                                                     |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| cobalt dinitrate (10141-05-6)          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                 | i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat), sz (Túlérzékenységet okozó (szenzibilizáló) tulajdonságú anyag. Az anyagra érzékeny egyéneken „túlérzékenységen” alapuló bőr-, légzőrendszeri, esetleg más szervet/szervrendszert károsító megbetegedést okozhat), BEM (biológiai expozíciós mutató); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkeznek)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                   | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Hungary - Biological Exposure Indices  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                             | Kobalt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| BEI                                    | 0,01 mg/g creatinine Biológiai expozíciós (hatás) mutató: kobalt - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén)<br>0,019 µmol/mmol Creatinine Biológiai expozíciós (hatás) mutató: kobalt - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                   | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Ireland - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                             | Cobalt & cobalt compounds (as Co)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| OEL TWA                                | 0,02 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                 | Advisory OELV (Advisory Occupational Exposure Limit Values), Sens (In the workplace, respiratory or dermal exposures to sensitising agents may occur. Sensitisers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The "sens" notation alone does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitisers present special problems in the workplace. Should an employee become sensitised, subsequent exposure may cause intense responses, even at low exposure concentrations well below the OELV. Exposure should be eliminated or significantly reduced through control measures such as engineering and process controls and use of personal protective equipment (PPE)), Carc.1B (Substances presumed to have carcinogenic potential for humans), Repr.1B (Substances which are presumed human reproductive toxicants) |
| Regulatory reference                   | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Ireland - Biological limit values      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                             | Cobalt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| BMGV                                   | 15 µg/l Parameter: cobalt - Medium: urine - Sampling time: End of shift at end of workweek - Notations: B (Background)<br>1 µg/l Parameter: cobalt - Medium: blood - Sampling time: End of shift at end of workweek - Notations: Sq (Semi-quantitative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                   | Biological Monitoring Guidelines (HSA, 2011)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Latvia - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                             | Kobalts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OEL TWA                                | 0,5 mg/m <sup>3</sup><br>0,5 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remark                                 | Carc. 1B; Muta. 2; Repr. 1B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                            |                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cobalt dinitrate (10141-05-6)              |                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                       | Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).<br>Ministru kabineta 2008. gada 29. septembra noteikumi Nr. 803 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 190).                                 |
| Netherlands - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                            |
| Local name                                 | Kobalt                                                                                                                                                                                                                                                                                                     |
| TGG-8u (OEL TWA)                           | 0,02 mg/m³ (stof en rook) (als Co)                                                                                                                                                                                                                                                                         |
| Regulatory reference                       | Arbeidsomstandighedenregeling 2024                                                                                                                                                                                                                                                                         |
| Portugal - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                            |
| Local name                                 | Cobalto e compostos inorgânicos, expressos em Co                                                                                                                                                                                                                                                           |
| OEL TWA                                    | 0,02 mg/m³                                                                                                                                                                                                                                                                                                 |
| Remark                                     | A3 (Agente carcinogénico confirmado nos animais de laboratório con relevância desconhecida no Homem); IBE (Índice biológico de exposição)                                                                                                                                                                  |
| Regulatory reference                       | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                              |
| Portugal - Biological Exposure Indices     |                                                                                                                                                                                                                                                                                                            |
| Local name                                 | Cobalto                                                                                                                                                                                                                                                                                                    |
| BEI                                        | 15 µg/l Parâmetro: Cobalto - Meio: urina - Momento da amostragem: Fim do turno no fim da semana de trabalho - Notação: Vb (Valor basal)<br>1 µg/l Parâmetro: Cobalto - Meio: sangue - Momento da amostragem: Fim do turno no fim da semana de trabalho - Notação: Vb (Valor basal), Sq (Semi quantitativo) |
| Regulatory reference                       | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                              |
| Romania - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                            |
| Local name                                 | Cobalt                                                                                                                                                                                                                                                                                                     |
| OEL TWA                                    | 0,05 mg/m³                                                                                                                                                                                                                                                                                                 |
| OEL STEL                                   | 0,1 mg/m³                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                       | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)                                                                                                                                                                                                                                               |
| Romania - Biological limit values          |                                                                                                                                                                                                                                                                                                            |
| Local name                                 | Cobalt                                                                                                                                                                                                                                                                                                     |
| BLV                                        | 15 µg/l Indicatorul biologic: Cobalt - Material biologic: urină - Momentul recoltării: sfârşit de săptămână<br>1 µg/l Indicatorul biologic: Cobalt - Material biologic: sânge - Momentul recoltării: sfârşit de săptămână                                                                                  |
| Regulatory reference                       | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)                                                                                                                                                                                                                                               |
| Spain - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                                            |
| Local name                                 | Cobalto elemental                                                                                                                                                                                                                                                                                          |
| VLA-ED (OEL TWA)                           | 0,02 mg/m³                                                                                                                                                                                                                                                                                                 |
| Remark                                     | VLB® (Agente químico que tiene Valor Límite Biológico), Sen (Sensibilizante).                                                                                                                                                                                                                              |
| Regulatory reference                       | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                              |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| cobalt dinitrate (10141-05-6)                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Spain - Biological limit values               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                    | Cobalto y compuestos inorgánicos excepto óxidos                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| BLV                                           | <p>15 µg/l Parámetro: Cobalto - Medio: Orina - Momento de muestreo: Final de la semana laboral - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB)</p> <p>1 µg/l Parámetro: Cobalto - Medio: Sangre - Momento de muestreo: Final de la semana laboral - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB), S (Significa que el indicador biológico es un indicador de exposición al agente químico en cuestión, pero la interpretación cuantitativa de su medida es ambigua (semicuantitativa). Estos indicadores biológicos deben utilizarse como una prueba de selección (screening) cuando no se pueda realizar una prueba cuantitativa o usarse como prueba de confirmación, si la prueba cuantitativa no es específica y el origen del determinante es dudoso)</p>                                                                                                                                                                                                                                  |
| Regulatory reference                          | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Sweden - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                    | Kobolt, och oorg. föreningar (som Co)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| NGV (OEL TWA)                                 | 0,02 mg/m³ inhalerbar fraktion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Remark                                        | <p>C (Ämnet är cancerframkallande. Risk för cancer finns även vid annan exponering än via inandning. För vissa cancerframkallande ämnen som inte har gränsvärden gäller förbud eller tillståndskrav enligt föreskrifterna om kemiska arbetsmiljörisker); H (Ämnet kan lätt upptas genom huden. Det föreskrivna gränsvärdet bedöms ge tillräckligt skydd endast under förutsättning att huden är skyddad mot exponering för ämnet ifråga); S (Ämnet är sensibiliserande. Sensibiliserande ämnen kan ge allergi eller annan överkänslighet. Överkänslighetsbesvären drabbar främst huden eller andningsorganen. Överkänslighet innebär att man reagerar vid kontakt med ämnen som normalt inte ger besvär. Allergi är en undergrupp av överkänslighet som orsakas av reaktioner i kroppens immunsystem. Särskilt låga gränsvärden har fastställts för ämnen med mer uttalat luftvägssensibiliserande egenskaper. Några ämnen med starkt sensibiliserande egenskaper får endast hanteras efter tillstånd från Arbetsmiljöverket, se föreskrifterna om kemiska arbetsmiljörisker. Dessa ämnen har inga gränsvärden men i vissa fall riktvärden); 3 (Med inhalerbar fraktion menas den mängd partiklar, av totalmängden partiklar i luften, som man inandas genom näsa och mun)</p> |
| Regulatory reference                          | Hygieniska gränsvärden (AFS 2018:1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                    | Cobalt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| WEL TWA (OEL TWA)                             | 0,1 mg/m³ and Cobalt compounds (as Co)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Remark                                        | Carc (cobalt dichloride and sulphate)(Capable of causing cancer and/or heritable genetic damage), Sen (Capable of causing occupational asthma)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                          | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Iceland - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                    | Kóbalt, ryk, reykur og ólífræn sambönd sem Co                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OEL TWA                                       | 0,02 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| cobalt dinitrate (10141-05-6)                      |                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                             | O (efnið er ofnæmisvaldandi)                                                                                                                                                                                                                                                             |
| Regulatory reference                               | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                |
| Switzerland - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                          |
| Local name                                         | Cobalt et ses composés / Cobalt und seine Verbindungen [Kobalt]                                                                                                                                                                                                                          |
| MAK (OEL TWA)                                      | 0,05 mg/m³ (i) / (e)                                                                                                                                                                                                                                                                     |
| Notation                                           | R, S, C1 <sub>B</sub> , M2, R1 <sub>B</sub> , B / H, S, C1 <sub>B</sub> , M2, R1 <sub>B</sub> , B                                                                                                                                                                                        |
| Remark                                             | HSE, NIOSH, BG. Exprimé en Co. / HSE, NIOSH, BG. Als Co berechnet.                                                                                                                                                                                                                       |
| Regulatory reference                               | www.suva.ch, 01.01.2024                                                                                                                                                                                                                                                                  |
| Switzerland - BAT                                  |                                                                                                                                                                                                                                                                                          |
| Local name                                         | Cobalt et ses composés / Cobalt und seine Verbindungen                                                                                                                                                                                                                                   |
| BAT                                                | 30 µg/l (509 nmol/l; Paramètre biologique: Cobalt; Substrat d'examen: Urine; Moment du prélèvement: Fin de l'exposition, de la période de travail.) / (509 nmol/l; Biologischer Parameter: Cobalt; Untersuchungsmaterial: Urin; Probenahmezeitpunkt: Expositionsende, bzw. Schichtende.) |
| Regulatory reference                               | Ordonnance 832.30 (OPA), article 50 al. 3, www.suva.ch/valeurs-limites / Verordnung 832.30 (VUV), Art. 50 Abs. 3, www.suva.ch/grenzwerte                                                                                                                                                 |
| USA - ACGIH - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                          |
| Local name                                         | Cobalt and inorganic compounds, as Co                                                                                                                                                                                                                                                    |
| ACGIH OEL TWA                                      | 0,02 mg/m³ (I - Inhalable particulate matter)                                                                                                                                                                                                                                            |
| Remark (ACGIH)                                     | TLV® Basis: Pulm func changes. Notations: DSEN; RSEN; A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEI                                                                                                                                                             |
| Regulatory reference                               | ACGIH 2024                                                                                                                                                                                                                                                                               |
| USA - ACGIH - Biological Exposure Indices          |                                                                                                                                                                                                                                                                                          |
| Local name                                         | Cobalt and inorganic compounds                                                                                                                                                                                                                                                           |
| BEI                                                | 15 µg/l Parameter: Cobalt - Medium: urine - Sampling time: End of shift at end of workweek - Notations: Ns                                                                                                                                                                               |
| Regulatory reference                               | ACGIH 2024                                                                                                                                                                                                                                                                               |
| chromium trinitrate (13548-38-4)                   |                                                                                                                                                                                                                                                                                          |
| EU - Indicative Occupational Exposure Limit (IOEL) |                                                                                                                                                                                                                                                                                          |
| Local name                                         | Chromium metal                                                                                                                                                                                                                                                                           |
| IOEL TWA                                           | 2 mg/m³                                                                                                                                                                                                                                                                                  |
| Regulatory reference                               | COMMISSION DIRECTIVE 2006/15/EC                                                                                                                                                                                                                                                          |
| Albania - Occupational Exposure Limits             |                                                                                                                                                                                                                                                                                          |
| Local name                                         | Krom, Metal                                                                                                                                                                                                                                                                              |
| OEL TWA                                            | 2 mg/m³                                                                                                                                                                                                                                                                                  |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| chromium trinitrate (13548-38-4)              |                                                                                                                                                                    |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regulatory reference                          | VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES "PËR MBROJTJEN E SIGURISË DHE SHËNDETIT TË PUNËMARRËSVE NGA RISQET E LIDHURA ME AGJENTËT KIMIKË NË PUNË" |
| Austria - Occupational Exposure Limits        |                                                                                                                                                                    |
| Local name                                    | Chrommetall, anorganische Chrom(II)-und anorganische Chrom(III)-Verbindungen (unlöslich)                                                                           |
| MAK (OEL TWA)                                 | 2 mg/m <sup>3</sup>                                                                                                                                                |
| Remark                                        | Sh                                                                                                                                                                 |
| Regulatory reference                          | BGBI. II Nr. 156/2021                                                                                                                                              |
| Belgium - Occupational Exposure Limits        |                                                                                                                                                                    |
| Local name                                    | Chrome métal et composés inorganiques (à l'exception des composés Cr VI) # Chroom (metaal) en anorganische verbindingen (met uitzondering van Cr VI verbindingen ) |
| OEL TWA                                       | 0,5 mg/m <sup>3</sup>                                                                                                                                              |
| Regulatory reference                          | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                         |
| Croatia - Occupational Exposure Limits        |                                                                                                                                                                    |
| Local name                                    | Krom, metal (kao Cr)                                                                                                                                               |
| GVI (OEL TWA)                                 | 2 mg/m <sup>3</sup>                                                                                                                                                |
| Remark                                        | EU** (naznaka da se radi o tvarima za koje su utvrđene indikativne granične vrijednosti izloženosti prema Direktivi 2006/15/ EC (druga lista))                     |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)     |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                    |
| Local name                                    | Prach z chromu                                                                                                                                                     |
| PEL (OEL TWA)                                 | 0,5 mg/m <sup>3</sup>                                                                                                                                              |
| Remark                                        | Prachy s převážně dráždivým účinkem.                                                                                                                               |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                              |
| Denmark - Occupational Exposure Limits        |                                                                                                                                                                    |
| Local name                                    | Chrom, pulver og opløselige chromi- og chromosalte                                                                                                                 |
| OEL TWA                                       | 0,5 mg/m <sup>3</sup> beregnet som Cr                                                                                                                              |
| Remark                                        | E (betyder, at stoffet har en EF-grænseværdi)                                                                                                                      |
| Regulatory reference                          | BEK nr 291 af 19/03/2024                                                                                                                                           |
| Finland - Occupational Exposure Limits        |                                                                                                                                                                    |
| Local name                                    | Kromi, metalli                                                                                                                                                     |
| HTP (OEL TWA)                                 | 0,5 mg/m <sup>3</sup><br>0,005 mg/m <sup>3</sup>                                                                                                                   |
| Regulatory reference                          | HTP-ARVOT 2020 (Sosiaali- ja terveystiete)                                                                                                                         |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| chromium trinitrate (13548-38-4)                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| France - Occupational Exposure Limits             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                        | Chrome (métal), composés de chrome inorganiques (II) et composés de chrome inorganiques (insolubles) (III)                                                                                                                                                                                                                                                                                                                                                                   |
| VME (OEL TWA)                                     | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remark                                            | Valeurs réglementaires indicatives                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                              | Arrêté du 30 juin 2004 modifié (réf.: INRS ED 6443, 2022; Outil65; Arrêté du 26 octobre 2007)                                                                                                                                                                                                                                                                                                                                                                                |
| Germany - Occupational Exposure Limits (TRGS 900) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                        | Chrom und anorganische Chrom (II) und (III)-Verbindungen                                                                                                                                                                                                                                                                                                                                                                                                                     |
| AGW (OEL TWA)                                     | 2 mg/m <sup>3</sup> E (mg/m <sup>3</sup> )                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Peak exposure limitation factor                   | 1(I)                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Remark                                            | 10,EU                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Regulatory reference                              | TRGS900                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Gibraltar - Occupational Exposure Limits          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                        | Chromium Metal, Inorganic Chromium (II) Compounds and Inorganic Chromium (III) Compounds (insoluble)                                                                                                                                                                                                                                                                                                                                                                         |
| OEL TWA                                           | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Regulatory reference                              | Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)                                                                                                                                                                                                                                                                                                                                                                                               |
| Greece - Occupational Exposure Limits             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                        | Χρώμιο (μεταλλικό)                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OEL TWA                                           | 1 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Regulatory reference                              | Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους                                                                                                                                                                                                                                                                                                                                      |
| Hungary - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                        | KRÓM (fém), SZERVETLEN KRÓM(II) és KRÓM(III) VEGYÜLETEK (nem oldható)                                                                                                                                                                                                                                                                                                                                                                                                        |
| AK (OEL TWA)                                      | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remark                                            | i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát), sz (Túlerzékenységet okozó (szenzibilizáló) tulajdonságú anyag. Az anyagra érzékeny egyéneken „túlerzékenységen” alapuló bőr-, légzőrendszeri, esetleg más szervet/szervrendszert károsító megbetegedést okozhat), BEM (biológiai expozíciós mutató); EU2 (2006/15/EK irányelvben közölt érték); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik) |
| Regulatory reference                              | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                                                                                                                                                             |
| Hungary - Biological Exposure Indices             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                        | Króm                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| chromium trinitrate (13548-38-4)           |                                                                                                                                                                                                                                                                                    |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BEI                                        | 0,01 mg/g creatinine Biológiai expozíciós (hatás) mutató: króm - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén)<br>0,022 µmol/mmol Creatinine Biológiai expozíciós (hatás) mutató: króm - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén) |
| Regulatory reference                       | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                   |
| Ireland - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                    |
| Local name                                 | Chromium metal                                                                                                                                                                                                                                                                     |
| OEL TWA                                    | 2 mg/m³                                                                                                                                                                                                                                                                            |
| Remark                                     | IOELV (Indicative Occupational Exposure Limit Values)                                                                                                                                                                                                                              |
| Regulatory reference                       | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                              |
| Lithuania - Occupational Exposure Limits   |                                                                                                                                                                                                                                                                                    |
| Local name                                 | Chromas, neorganinio chromo (II) junginiai ir neorganinio chromo (III) junginiai (netirpūs)                                                                                                                                                                                        |
| IPRV (OEL TWA)                             | 2 mg/m³                                                                                                                                                                                                                                                                            |
| Regulatory reference                       | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)                                                                                                                                                                                                                  |
| Luxembourg - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                    |
| Local name                                 | Métal chrome, composés de chrome inorganiques (II) et composés de chrome inorganiques (insolubles) (III)                                                                                                                                                                           |
| OEL TWA                                    | 2 mg/m³                                                                                                                                                                                                                                                                            |
| Regulatory reference                       | Mémorial A N° 226 de 2021 concernant la protection de la sécurité et de la santé des salariés contre les risques liés à des agents chimiques sur le lieu de travail                                                                                                                |
| Malta - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                    |
| Local name                                 | Chromium Metal, Inorganic Chromium (II) Compounds and Inorganic Chromium (III) Compounds (insoluble)                                                                                                                                                                               |
| OEL TWA                                    | 2 mg/m³                                                                                                                                                                                                                                                                            |
| Regulatory reference                       | S.L. 424.24 - Chemical Agents at Work Regulations (L.N. 356 of 2021) # L.S. 424.24 - Regolamenti dwar Agenti Kimiċi fuq il-Post tax-Xogħol (A.L. 356 tal-2021)                                                                                                                     |
| Netherlands - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                    |
| Local name                                 | Chroom                                                                                                                                                                                                                                                                             |
| TGG-8u (OEL TWA)                           | 0,5 mg/m³ (metallisch)                                                                                                                                                                                                                                                             |
| Regulatory reference                       | Arbeidsomstandighedenregeling 2024                                                                                                                                                                                                                                                 |
| Poland - Occupational Exposure Limits      |                                                                                                                                                                                                                                                                                    |
| Local name                                 | Chrom metaliczny                                                                                                                                                                                                                                                                   |
| NDS (OEL TWA)                              | 0,5 mg/m³                                                                                                                                                                                                                                                                          |
| Regulatory reference                       | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                                                                                                                                                             |
| Portugal - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                    |
| Local name                                 | Crómio e compostos inorgânicos, expressos em Cr                                                                                                                                                                                                                                    |



**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| chromium trinitrate (13548-38-4)        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OEL TWA                                 | 0,5 mg/m <sup>3</sup> Metal e compostos de crómio (III)<br>0,05 mg/m <sup>3</sup> Compostos de crómio (VI) solúveis em água<br>0,01 mg/m <sup>3</sup> Compostos de crómio (VI) insolúveis                                                                                                                                                                                                                                                                                                               |
| Remark                                  | A4 (Agente não classificável como carcinogénico no Homem)                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Regulatory reference                    | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Romania - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Crom metallic, compuși anorganici ai cromului (II) și compuși anorganici ai cromului (insolubili) (III)                                                                                                                                                                                                                                                                                                                                                                                                 |
| OEL TWA                                 | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Slovenia - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | krom – kovinski, anorganske kromove (II) spojine in anorganske kromove (III) spojine (netopne)                                                                                                                                                                                                                                                                                                                                                                                                          |
| OEL TWA                                 | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| OEL STEL                                | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remark                                  | EU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                    | Uradni list RS, št. 29/2024 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu                                                                                                                                                                                                                                                                                                                                                            |
| Spain - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Cromo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| VLA-ED (OEL TWA)                        | 2 mg/m <sup>3</sup> metal<br>2 mg/m <sup>3</sup> Compuestos inorgánicos de Cr (II) y de Cr (III) insolubles, como Cr<br>0,05 mg/m <sup>3</sup> Cromo (VI), Compuestos inorgánicos, excepto los expresamente indicados.<br>Compuestos solubles, como Cr<br>0,01 mg/m <sup>3</sup> Cromo (VI), Compuestos inorgánicos, excepto los expresamente indicados.<br>Compuestos insolubles, como Cr                                                                                                              |
| Remark                                  | VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país). |
| Regulatory reference                    | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Sweden - Occupational Exposure Limits   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Krom, och oorg. (II, III)-föreningar (som Cr)                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| NGV (OEL TWA)                           | 0,5 mg/m <sup>3</sup> totaldamm                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Remark                                  | 3 (Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i Metodserien, Provtagning av totaldamm och respirabelt damm, Metod nr 1010, Arbetarskyddsstyrelsen, numera Arbetsmiljöverket. Filterdiametern är normalt 37 mm, men kan även vara 25 mm. Trots sitt namn provtas inte den totala mängden luftburna partiklar med denna metod)                                                                                                                  |
| Regulatory reference                    | Hygieniska gränsvärden (AFS 2018:1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| chromium trinitrate (13548-38-4)                   |                                                                                                                                          |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| United Kingdom - Occupational Exposure Limits      |                                                                                                                                          |
| Local name                                         | Chromium                                                                                                                                 |
| WEL TWA (OEL TWA)                                  | 0,5 mg/m <sup>3</sup><br>0,5 mg/m <sup>3</sup> Chromium (II) compounds (as Cr)<br>0,5 mg/m <sup>3</sup> Chromium (III) compounds (as Cr) |
| Regulatory reference                               | EH40/2005 (Fourth edition, 2020). HSE                                                                                                    |
| Iceland - Occupational Exposure Limits             |                                                                                                                                          |
| Local name                                         | Króm, duft og króm (króm II og III), sambönd sem Cr                                                                                      |
| OEL TWA                                            | 0,5 mg/m <sup>3</sup>                                                                                                                    |
| Regulatory reference                               | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                |
| Switzerland - Occupational Exposure Limits         |                                                                                                                                          |
| MAK (OEL TWA)                                      | 0,005 mg/m <sup>3</sup><br>0,5 mg/m <sup>3</sup><br>0,005 mg/m <sup>3</sup><br>0,005 mg/m <sup>3</sup>                                   |
| USA - ACGIH - Occupational Exposure Limits         |                                                                                                                                          |
| Local name                                         | Metallic chromium, as Cr(0)                                                                                                              |
| ACGIH OEL TWA                                      | 0,5 mg/m <sup>3</sup> (I - Inhalable particulate matter)                                                                                 |
| Remark (ACGIH)                                     | TLV® Basis: Resp tract irr                                                                                                               |
| Regulatory reference                               | ACGIH 2024                                                                                                                               |
| copper dinitrate (3251-23-8)                       |                                                                                                                                          |
| EU - Indicative Occupational Exposure Limit (IOEL) |                                                                                                                                          |
| Local name                                         | Copper                                                                                                                                   |
| IOEL TWA                                           | 0,01 mg/m <sup>3</sup> (respirable fraction)                                                                                             |
| Remark                                             | (Year of adoption 2014)                                                                                                                  |
| Regulatory reference                               | SCOEL Recommendations                                                                                                                    |
| Austria - Occupational Exposure Limits             |                                                                                                                                          |
| Local name                                         | Kupfer und seine Verbindungen                                                                                                            |
| MAK (OEL TWA)                                      | 1 mg/m <sup>3</sup> (als Cu berechnet, E)<br>0,1 mg/m <sup>3</sup> (als Rauch, als Cu berechnet, A)                                      |
| MAK (OEL STEL)                                     | 4 mg/m <sup>3</sup> (als Cu berechnet, E, 4x 15(Miw) min)<br>0,4 mg/m <sup>3</sup> (als Rauch, als Cu berechnet, A, 4x 15(Miw) min)      |
| Regulatory reference                               | BGBl. II Nr. 156/2021                                                                                                                    |
| Belgium - Occupational Exposure Limits             |                                                                                                                                          |
| Local name                                         | Cuivre (en Cu) # Koper (als Cu)                                                                                                          |
| OEL TWA                                            | 0,2 mg/m <sup>3</sup> (fumées) # (rook)<br>1 mg/m <sup>3</sup> (poussières et brouillards de) # (stof en nevel)                          |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                               |                                                                                                                                                                                   |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| copper dinitrate (3251-23-8)                  |                                                                                                                                                                                   |
| Regulatory reference                          | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                        |
| Bulgaria - Occupational Exposure Limits       |                                                                                                                                                                                   |
| Local name                                    | Мед                                                                                                                                                                               |
| OEL TWA                                       | 0,1 mg/m³ (метални пари (като мед))<br>1 mg/m³ (оксиди и неорганични съединения (като мед))                                                                                       |
| Regulatory reference                          | Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.) |
| Croatia - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Bakar                                                                                                                                                                             |
| GVI (OEL TWA)                                 | 0,2 mg/m³ dim (kao Cu)<br>1 mg/m³ prašina (kao Cu)                                                                                                                                |
| KGVI (OEL STEL)                               | 2 mg/m³ prašina (kao Cu)                                                                                                                                                          |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)                    |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                                   |
| Local name                                    | Měď                                                                                                                                                                               |
| PEL (OEL TWA)                                 | 1 mg/m³ (prach) (V - vdechovatelná frakce aerosolu)<br>0,1 mg/m³ (dýmy) (R - respirabilní frakce aerosolu)                                                                        |
| NPK-P (OEL C)                                 | 2 mg/m³ (prach) (V - vdechovatelná frakce aerosolu)<br>0,2 mg/m³ (dýmy) (R - respirabilní frakce aerosolu)                                                                        |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                             |
| Denmark - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Kobber                                                                                                                                                                            |
| OEL TWA                                       | 1 mg/m³ pulver og støv<br>0,1 mg/m³ røg, beregnet som Cu                                                                                                                          |
| Regulatory reference                          | BEK nr 291 af 19/03/2024                                                                                                                                                          |
| Estonia - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Vask ja anorgaanilised ühendid (arvutatud vasele)                                                                                                                                 |
| OEL TWA                                       | 1 mg/m³ kogu tolm<br>0,2 mg/m³ peentolm                                                                                                                                           |
| Regulatory reference                          | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                                      |
| Finland - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Kupari-(II)-nitraatti                                                                                                                                                             |
| HTP (OEL TWA)                                 | 0,02 mg/m³ Cu, alveolijae                                                                                                                                                         |
| Regulatory reference                          | HTP-ARVOT 2020 (Sosiaali- ja terveystiete)                                                                                                                                        |
| France - Occupational Exposure Limits         |                                                                                                                                                                                   |
| Local name                                    | Cuivre                                                                                                                                                                            |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                            |                                                                                                                                                                                   |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| copper dinitrate (3251-23-8)               |                                                                                                                                                                                   |
| VME (OEL TWA)                              | 0,2 mg/m³ (fumées)<br>1 mg/m³ (poussières), en Cu                                                                                                                                 |
| VLE (OEL C/STEL)                           | 2 mg/m³ (poussières), en Cu                                                                                                                                                       |
| Remark                                     | Valeurs recommandées/admises                                                                                                                                                      |
| Regulatory reference                       | Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)                                                                                                            |
| Hungary - Occupational Exposure Limits     |                                                                                                                                                                                   |
| Local name                                 | RÉZ és vegyületei (Cu-re számítva)                                                                                                                                                |
| AK (OEL TWA)                               | 0,1 mg/m³<br>0,01 mg/m³ füst, respirábilis frakció                                                                                                                                |
| CK (OEL STEL)                              | 0,2 mg/m³                                                                                                                                                                         |
| Remark                                     | R (Azok az anyagok, amelyek egészségkárosító hatása RÖVID expozíció hatására jelentkezik)                                                                                         |
| Regulatory reference                       | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                  |
| Ireland - Occupational Exposure Limits     |                                                                                                                                                                                   |
| Local name                                 | Copper (as Cu)                                                                                                                                                                    |
| OEL TWA                                    | 0,2 mg/m³ Fume<br>1 mg/m³ Dusts and mists                                                                                                                                         |
| Remark                                     | Advisory OELV (Advisory Occupational Exposure Limit Values)                                                                                                                       |
| Regulatory reference                       | Chemical Agents Code of Practice 2024                                                                                                                                             |
| Latvia - Occupational Exposure Limits      |                                                                                                                                                                                   |
| Local name                                 | Varš                                                                                                                                                                              |
| OEL TWA                                    | 0,5 mg/m³                                                                                                                                                                         |
| OEL STEL                                   | 1 mg/m³                                                                                                                                                                           |
| Regulatory reference                       | Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).                                                |
| Netherlands - Occupational Exposure Limits |                                                                                                                                                                                   |
| Local name                                 | Koper                                                                                                                                                                             |
| TGG-8u (OEL TWA)                           | 0,1 mg/m³ (Koper en anorganische koperverbindingen (inhaleerbaar); Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value; inhaleerbaar) |
| Regulatory reference                       | Arbeidsomstandighedenregeling 2024                                                                                                                                                |
| Poland - Occupational Exposure Limits      |                                                                                                                                                                                   |
| Local name                                 | Miedź i jej związki nieorganiczne                                                                                                                                                 |
| NDS (OEL TWA)                              | 0,2 mg/m³ w przeliczeniu na Cu                                                                                                                                                    |
| Regulatory reference                       | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                                                            |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| copper dinitrate (3251-23-8)                  |                                                                                                                                                         |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Portugal - Occupational Exposure Limits       |                                                                                                                                                         |
| Local name                                    | Cobre                                                                                                                                                   |
| OEL TWA                                       | 0,2 mg/m³ Fumos, expressos em Cu<br>1 mg/m³ Poeiras e névoas, expressos em Cu                                                                           |
| Regulatory reference                          | Norma Portuguesa NP 1796:2014                                                                                                                           |
| Romania - Occupational Exposure Limits        |                                                                                                                                                         |
| Local name                                    | Cupru                                                                                                                                                   |
| OEL TWA                                       | 0,5 mg/m³ (Pulberi)                                                                                                                                     |
| OEL STEL                                      | 0,2 mg/m³ (Fumuri)<br>1,5 mg/m³ (Pulberi)                                                                                                               |
| Regulatory reference                          | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)                                                                                            |
| Spain - Occupational Exposure Limits          |                                                                                                                                                         |
| Local name                                    | Compuestos de cobre                                                                                                                                     |
| VLA-ED (OEL TWA)                              | 0,01 mg/m³ como Cu. Fracción respirable                                                                                                                 |
| Remark                                        | d (Véase UNE EN 481: Atmósferas en los puestos de trabajo. Definición de las fracciones por el tamaño de las partículas para la medición de aerosoles). |
| Regulatory reference                          | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                           |
| Sweden - Occupational Exposure Limits         |                                                                                                                                                         |
| Local name                                    | Koppar, och oorg. Föreningar (som Cu)                                                                                                                   |
| NGV (OEL TWA)                                 | 0,01 mg/m³ respirabel fraktion                                                                                                                          |
| Remark                                        | 3 (Den respirabla fraktionen är de inhalerbara partiklar som når längst ner i luftvägarna, till alveolerna i lungorna)                                  |
| Regulatory reference                          | Hygieniska gränsvärden (AFS 2018:1)                                                                                                                     |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                                         |
| Local name                                    | Copper and compounds                                                                                                                                    |
| WEL TWA (OEL TWA)                             | 1 mg/m³ dusts and mists (as Cu)                                                                                                                         |
| WEL STEL (OEL STEL)                           | 2 mg/m³ dusts and mists (as Cu)                                                                                                                         |
| Regulatory reference                          | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                   |
| Iceland - Occupational Exposure Limits        |                                                                                                                                                         |
| Local name                                    | Kopar                                                                                                                                                   |
| OEL TWA                                       | 1 mg/m³ duft og ryk, (heildarryk)<br>0,1 mg/m³ reykur, sem Cu, (örfínt ryk)                                                                             |
| Regulatory reference                          | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                               |
| Norway - Occupational Exposure Limits         |                                                                                                                                                         |
| Local name                                    | Kobber                                                                                                                                                  |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| copper dinitrate (3251-23-8)               |                                                                                                                                                                |
| Grenseverdi (OEL TWA)                      | 0,1 mg/m³ Røyk<br>1 mg/m³ Støv                                                                                                                                 |
| Regulatory reference                       | FOR-2024-04-05-581                                                                                                                                             |
| Switzerland - Occupational Exposure Limits |                                                                                                                                                                |
| Local name                                 | Cuivre et ses composés inorganiques / Kupfer und seine anorganischen Verbindungen                                                                              |
| MAK (OEL TWA)                              | 0,1 mg/m³ (i) / (e)                                                                                                                                            |
| KZGW (OEL STEL)                            | 0,2 mg/m³ (i) / (e)                                                                                                                                            |
| Notation                                   | SS <sub>c</sub> / SS <sub>c</sub>                                                                                                                              |
| Remark                                     | NIOSH. Exprimé en Cu. / NIOSH. Als Cu berechnet.                                                                                                               |
| Regulatory reference                       | www.suva.ch, 01.01.2024                                                                                                                                        |
| USA - ACGIH - Occupational Exposure Limits |                                                                                                                                                                |
| Local name                                 | Copper, as Cu                                                                                                                                                  |
| ACGIH OEL TWA                              | 0,2 mg/m³ (Fume)<br>1 mg/m³ (Dusts and mists)                                                                                                                  |
| Remark (ACGIH)                             | TLV® Basis: Irr; GI; metal fume fever                                                                                                                          |
| Regulatory reference                       | ACGIH 2024                                                                                                                                                     |
| iron trinitrate (10421-48-4)               |                                                                                                                                                                |
| Belgium - Occupational Exposure Limits     |                                                                                                                                                                |
| Local name                                 | Fer (sels solubles) (en Fe) # IJzerzouten (oplosbaar) (als Fe)                                                                                                 |
| OEL TWA                                    | 1 mg/m³ (Fer (sels solubles) (en Fe); Belgium; Time-weighted average exposure limit 8 h)                                                                       |
| Regulatory reference                       | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                     |
| Croatia - Occupational Exposure Limits     |                                                                                                                                                                |
| Local name                                 | Željezove soli (kao Fe)                                                                                                                                        |
| GVI (OEL TWA)                              | 1 mg/m³                                                                                                                                                        |
| KGVI (OEL STEL)                            | 2 mg/m³                                                                                                                                                        |
| Regulatory reference                       | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023) |
| Denmark - Occupational Exposure Limits     |                                                                                                                                                                |
| Local name                                 | Jernsalte, opløselige                                                                                                                                          |
| OEL TWA                                    | 1 mg/m³ beregnet som Fe                                                                                                                                        |
| Regulatory reference                       | BEK nr 291 af 19/03/2024                                                                                                                                       |
| Greece - Occupational Exposure Limits      |                                                                                                                                                                |
| Local name                                 | Σιδήρου (διαλυτά άλατα ως Fe)                                                                                                                                  |
| OEL TWA                                    | 1 mg/m³                                                                                                                                                        |
| OEL STEL                                   | 2 mg/m³                                                                                                                                                        |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| iron trinitrate (10421-48-4)                  |                                                                                                                                         |
| Regulatory reference                          | Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους |
| Ireland - Occupational Exposure Limits        |                                                                                                                                         |
| Local name                                    | Iron salts (as Fe)                                                                                                                      |
| OEL TWA                                       | 1 mg/m³                                                                                                                                 |
| OEL STEL                                      | 2 mg/m³                                                                                                                                 |
| Remark                                        | Advisory OELV (Advisory Occupational Exposure Limit Values)                                                                             |
| Regulatory reference                          | Chemical Agents Code of Practice 2024                                                                                                   |
| Portugal - Occupational Exposure Limits       |                                                                                                                                         |
| Local name                                    | Ferro, sais solúveis de ferro, expressos em Fe                                                                                          |
| OEL TWA                                       | 1 mg/m³                                                                                                                                 |
| Regulatory reference                          | Norma Portuguesa NP 1796:2014                                                                                                           |
| Spain - Occupational Exposure Limits          |                                                                                                                                         |
| Local name                                    | Hierro: Sales solubles                                                                                                                  |
| VLA-ED (OEL TWA)                              | 1 mg/m³ como Fe                                                                                                                         |
| Remark                                        | c (Los términos “soluble” e “insoluble” se entienden con referencia al agua).                                                           |
| Regulatory reference                          | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                           |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                         |
| Local name                                    | Iron salts                                                                                                                              |
| WEL TWA (OEL TWA)                             | 1 mg/m³ (as Fe)                                                                                                                         |
| WEL STEL (OEL STEL)                           | 2 mg/m³ (as Fe)                                                                                                                         |
| Regulatory reference                          | EH40/2005 (Fourth edition, 2020). HSE                                                                                                   |
| Iceland - Occupational Exposure Limits        |                                                                                                                                         |
| Local name                                    | Járnsölt, uppleysanleg, sem Fe                                                                                                          |
| OEL TWA                                       | 1 mg/m³                                                                                                                                 |
| Regulatory reference                          | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                               |
| Norway - Occupational Exposure Limits         |                                                                                                                                         |
| Local name                                    | Jernsalter (beregnet som Fe)                                                                                                            |
| Grenseverdi (OEL TWA)                         | 1 mg/m³                                                                                                                                 |
| Regulatory reference                          | FOR-2024-04-05-581                                                                                                                      |
| Switzerland - Occupational Exposure Limits    |                                                                                                                                         |
| Local name                                    | Fer (sels solubles) / Eisensalze (löslich)                                                                                              |
| MAK (OEL TWA)                                 | 1 mg/m³ (i) / (e)                                                                                                                       |
| Remark                                        | OSHA. Exprimé en Fe / OSHA. Als Fe berechnet                                                                                            |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| iron trinitrate (10421-48-4)                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regulatory reference                               | www.suva.ch, 01.01.2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| USA - ACGIH - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                         | Iron salts, soluble, as Fe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| ACGIH OEL TWA                                      | 1 mg/m <sup>3</sup> (Iron salts, soluble, as Fe; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark (ACGIH)                                     | TLV® Basis: URT & skin irr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                               | ACGIH 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| manganese dinitrate (10377-66-9)                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| EU - Indicative Occupational Exposure Limit (IOEL) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                         | Manganese                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| IOEL TWA                                           | 0,2 mg/m <sup>3</sup> (inhalable fraction)<br>0,05 mg/m <sup>3</sup> (respirable fraction)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Remark                                             | (Year of adoption 2011)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Regulatory reference                               | SCOEL Recommendations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Austria - Occupational Exposure Limits             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                         | Mangan und seine anorganischen Verbindungen: Mangan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MAK (OEL TWA)                                      | 0,2 mg/m <sup>3</sup> (als Mn berechnet, E)<br>0,05 mg/m <sup>3</sup> (als Mn berechnet, A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| MAK (OEL STEL)                                     | 1,6 mg/m <sup>3</sup> (als Mn berechnet, E, 4x 15(Miw) min)<br>0,16 mg/m <sup>3</sup> (als Mn berechnet, A, 4x 15(Miw) min)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                               | BGBI. II Nr. 156/2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Austria - Biological limit values                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                         | Mangan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| BLV                                                | 20 µg/l Parameter: Mangan - Untersuchungsmaterial: Blut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                             | Eignung: Blut: nur bei Verdacht auf manganbedingte neurologische Symptomatik<br>Eignung mit vorzeitiger Folgeuntersuchung: Bei Überschreiten des Grenzwertes für Mangan im Blut. Bei anhaltendem Husten oder Abfall des systolischen Blutdrucks. Bei Vorliegen einer wesentlichen Beeinträchtigung der Lungenfunktion. Diese liegt vor, wenn nach mehrmaliger Messung der beste gemessene Wert den für den/die Untersuchte/n maßgebenden Sollwert um 20% unterschreitet bzw. den MEF50-Sollwert um 50% unterschreitet. Eine vorzeitige Folgeuntersuchung ist jedoch nicht erforderlich, wenn im Vergleich zu Vorbefunden der altersabhängige physiologische Abfall der 1-Sekundenkapazität (FEV1) von 40 ml/Jahr nicht überschritten wird oder aus der Beurteilung des Kurvenverlaufes der Forcierten Vitalkapazität (FVC) eine eingeschränkte Mitarbeit des Untersuchten/der Untersuchten ersichtlich ist.<br>Der Zeitabstand zwischen den Untersuchungen beträgt bei Eignung: ein Jahr; bei Eignung mit vorzeitiger Folgeuntersuchung: sechs Monate |
| Regulatory reference                               | Verordnung über die Gesundheitsüberwachung am Arbeitsplatz 2017 (VGÜ 2017)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Belgium - Occupational Exposure Limits             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                         | Manganèse et ses composés (en Mn) # Mangaan, en -verbindingen (als Mn)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| manganese dinitrate (10377-66-9)                  |                                                                                                                                                                |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OEL TWA                                           | 0,2 mg/m <sup>3</sup>                                                                                                                                          |
| Regulatory reference                              | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                     |
| Bulgaria - Occupational Exposure Limits           |                                                                                                                                                                |
| Local name                                        | Манган                                                                                                                                                         |
| OEL TWA                                           | 0,3 mg/m <sup>3</sup> оксид и неорганични съединения (като манган)                                                                                             |
| OEL STEL                                          | 3 mg/m <sup>3</sup> оксид и неорганични съединения (като манган)                                                                                               |
| Croatia - Occupational Exposure Limits            |                                                                                                                                                                |
| Local name                                        | Mangan i anorganski spojevi mangana (kao Mn)                                                                                                                   |
| GVI (OEL TWA)                                     | 0,2 mg/m <sup>3</sup> U (ukupna prašina)<br>0,05 mg/m <sup>3</sup> R (respirabilna prašina) (Frakcija koja udisanjem može doprijeti u pluća)                   |
| Remark                                            | Direktiva: 2017/164/EU                                                                                                                                         |
| Regulatory reference                              | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023) |
| Czech Republic - Occupational Exposure Limits     |                                                                                                                                                                |
| Local name                                        | Mangan                                                                                                                                                         |
| PEL (OEL TWA)                                     | 1 mg/m <sup>3</sup>                                                                                                                                            |
| NPK-P (OEL C)                                     | 2 mg/m <sup>3</sup>                                                                                                                                            |
| Regulatory reference                              | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                          |
| Denmark - Occupational Exposure Limits            |                                                                                                                                                                |
| Local name                                        | Mangan, pulver, støv og uorganiske forbindelser                                                                                                                |
| OEL TWA                                           | 0,2 mg/m <sup>3</sup> beregnet som Mn<br>0,1 mg/m <sup>3</sup> respirabel                                                                                      |
| Remark                                            | E (betyder, at stoffet har en EF-grænseværdi)                                                                                                                  |
| Regulatory reference                              | BEK nr 291 af 19/03/2024                                                                                                                                       |
| Finland - Occupational Exposure Limits            |                                                                                                                                                                |
| Local name                                        | Mangaani, metalli                                                                                                                                              |
| HTP (OEL TWA)                                     | 0,02 mg/m <sup>3</sup>                                                                                                                                         |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                                                |
| Germany - Occupational Exposure Limits (TRGS 900) |                                                                                                                                                                |
| Local name                                        | Mangan und seine anorganischen Verbindungen                                                                                                                    |
| AGW (OEL TWA)                                     | 0,02 mg/m <sup>3</sup> A (mg/m <sup>3</sup> )<br>0,2 mg/m <sup>3</sup> E (mg/m <sup>3</sup> )                                                                  |
| Peak exposure limitation factor                   | 8(II)                                                                                                                                                          |
| Remark                                            | DFG,Y,10,20                                                                                                                                                    |
| Regulatory reference                              | TRGS900                                                                                                                                                        |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| manganese dinitrate (10377-66-9)           |                                                                                                                                                                                                                                                                                                    |
| Hungary - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                    |
| Local name                                 | MANGÁN ÉS SZERVETLEN SÓI (mangán-tetraoxid kivételével, Mn-ra számítva)                                                                                                                                                                                                                            |
| AK (OEL TWA)                               | 5 mg/m³                                                                                                                                                                                                                                                                                            |
| CK (OEL STEL)                              | 20 mg/m³                                                                                                                                                                                                                                                                                           |
| Remark                                     | EU4 (2017/164 EU irányelvben közölt érték); Por: T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkeznek), füst: R+T (Azok az anyagok, amelyek RÖVID és TARTÓS expozíciója is egészségkárosodást okoz)                                                         |
| Regulatory reference                       | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                   |
| Ireland - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                    |
| Local name                                 | Manganese, fume (as Mn)                                                                                                                                                                                                                                                                            |
| OEL TWA                                    | 0,2 mg/m³ I (Inhalable Fraction)<br>0,02 mg/m³ R (Respirable Fraction)                                                                                                                                                                                                                             |
| OEL STEL                                   | 3 mg/m³                                                                                                                                                                                                                                                                                            |
| Remark                                     | Advisory OELV (Advisory Occupational Exposure Limit Values)                                                                                                                                                                                                                                        |
| Regulatory reference                       | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                                              |
| Latvia - Occupational Exposure Limits      |                                                                                                                                                                                                                                                                                                    |
| Local name                                 | Mangānsmetināšanas aerosolos(kondensācijas aerosols)                                                                                                                                                                                                                                               |
| OEL TWA                                    | 0,1 mg/m³                                                                                                                                                                                                                                                                                          |
| Regulatory reference                       | Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).                                                                                                                                                                 |
| Netherlands - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                    |
| Local name                                 | Mangaan en anorganische mangaan-verbindingen                                                                                                                                                                                                                                                       |
| TGG-8u (OEL TWA)                           | 0,2 mg/m³ (Inhaleerbaar (als mangaan))                                                                                                                                                                                                                                                             |
| TGG-15min (OEL STEL)                       | 0,05 mg/m³ (Respirabel)                                                                                                                                                                                                                                                                            |
| Regulatory reference                       | Arbeidsomstandighedenregeling 2024                                                                                                                                                                                                                                                                 |
| Poland - Occupational Exposure Limits      |                                                                                                                                                                                                                                                                                                    |
| Local name                                 | Mangan i jego związki nieorganiczne w przeliczeniu na Mn                                                                                                                                                                                                                                           |
| NDS (OEL TWA)                              | 0,3 mg/m³                                                                                                                                                                                                                                                                                          |
| Remark                                     | Frakcja wdychalna – frakcja aerozolu wnikaćca przez nos i usta, która stwarza zagrożenie dla zdrowia po zdeponowaniu w drogach oddechowych. Frakcja respirabilna – frakcja aerozolu wnikaćca do dróg oddechowych, która stwarza zagrożenie dla zdrowia po zdeponowaniu w obszarze wymiany gazowej. |
| Regulatory reference                       | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                                                                                                                                                                             |
| Portugal - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                    |
| Local name                                 | Manganês e compostos inorgânicos, expressos em Mn                                                                                                                                                                                                                                                  |
| OEL TWA                                    | 0,02 mg/m³ R (Fração respirável)<br>0,1 mg/m³ I (Fração inalável)                                                                                                                                                                                                                                  |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| manganese dinitrate (10377-66-9)              |                                                                                                                                                                                                                                                    |
| Remark                                        | A4 (Agente não classificável como carcinogénico no Homem)                                                                                                                                                                                          |
| Regulatory reference                          | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                      |
| Romania - Occupational Exposure Limits        |                                                                                                                                                                                                                                                    |
| Local name                                    | Mangan                                                                                                                                                                                                                                             |
| OEL TWA                                       | 0,5 mg/m³                                                                                                                                                                                                                                          |
| Regulatory reference                          | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)                                                                                                                                                                                       |
| Slovenia - Occupational Exposure Limits       |                                                                                                                                                                                                                                                    |
| Local name                                    | mangan in njegove anorganske spojine vključno strimanganovim tetraoksidom                                                                                                                                                                          |
| OEL TWA                                       | 0,5 mg/m³                                                                                                                                                                                                                                          |
| OEL STEL                                      | 2 mg/m³                                                                                                                                                                                                                                            |
| Remark                                        | Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), EU                                                                                                                                               |
| Regulatory reference                          | Uradni list RS, št. 29/2024 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu                                                                                                       |
| Spain - Occupational Exposure Limits          |                                                                                                                                                                                                                                                    |
| Local name                                    | Manganeso                                                                                                                                                                                                                                          |
| VLA-ED (OEL TWA)                              | 0,2 mg/m³ elemental. Fracción inhalable<br>0,2 mg/m³ Compuestos inorgánicos de Manganeso, como Mn. Fracción inhalable<br>0,05 mg/m³ elemental. Fracción respirable<br>0,05 mg/m³ Compuestos inorgánicos de manganeso, como Mn. Fracción respirable |
| Remark                                        | VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo), d (Véase UNE EN 481: Atmósferas en los puestos de trabajo. Definición de las fracciones por el tamaño de las partículas para la medición de aerosoles).  |
| Regulatory reference                          | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                      |
| Sweden - Occupational Exposure Limits         |                                                                                                                                                                                                                                                    |
| Local name                                    | Mangan, och oorg. föreningar (som Mn)                                                                                                                                                                                                              |
| NGV (OEL TWA)                                 | 0,2 mg/m³ totaldamm<br>0,1 mg/m³ respirabelt damm                                                                                                                                                                                                  |
| Remark                                        | 3 (Med inhalerbar fraktion menas den mängd partiklar, av totalmängden partiklar i luften, som man inandas genom näsa och mun. Den respirabla fraktionen är de inhalerbara partiklar som når längst ner i luftvägarna, till alveolerna i lungorna)  |
| Regulatory reference                          | Hygieniska gränsvärden (AFS 2018:1)                                                                                                                                                                                                                |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                                                                                                                                    |
| WEL TWA (OEL TWA)                             | 0,05 mg/m³ and its inorganic compounds (as Mn) respirable dust                                                                                                                                                                                     |
| Iceland - Occupational Exposure Limits        |                                                                                                                                                                                                                                                    |
| Local name                                    | Mangan, duft, ryk (heildarryk) og ólífræn bindiefni, sem Mn                                                                                                                                                                                        |
| OEL TWA                                       | 2,5 mg/m³ heildarryk<br>1 mg/m³ örfint ryk                                                                                                                                                                                                         |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| manganese dinitrate (10377-66-9)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OEL STEL                                       | 5 mg/m <sup>3</sup> heildarryk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                           | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Norway - Occupational Exposure Limits          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                     | Mangan og uorganiske manganforb. (beregnet som Mn)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Grenseverdi (OEL TWA)                          | 0,2 mg/m <sup>3</sup> Inhalerbar fraksjon<br>0,05 mg/m <sup>3</sup> Respirabel fraksjon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Remark                                         | E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet; 8) Enkelte bedrifter innen smelteverkindustrien vil av teknisk-økonomiske årsaker ikke kunne overholde grenseverdiene. Det er disse bedriftenes ansvar å dokumentere et forsvarlig arbeidsmiljø. Det forutsettes at bedriften(e) har en plan for reduksjon av eksponering og at man kan vise lavere verdier over tid. Arbeidstilsynet, ansattrepresentanter og verneombud skal konsulteres og informeres om årlige planer og oppnådde resultater.                                                                                                         |
| Regulatory reference                           | FOR-2024-04-05-581                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| North Macedonia - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                     | Манган и неоргански соединенија                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| OEL TWA                                        | 0,5 mg/m <sup>3</sup> (l) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| KTV                                            | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Short time value [mg/m <sup>3</sup> ]          | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Remark                                         | (KTV) краткотрајна вредност (КТВ) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покусо време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m <sup>3</sup> или во ml/m <sup>3</sup> (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (Y) |
| Regulatory reference                           | Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Switzerland - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                     | Manganèse et ses composés inorg. / Mangan und seine anorganischen Verbindungen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| MAK (OEL TWA)                                  | 0,2 mg/m <sup>3</sup> (i) / (e)<br>0,1 mg/m <sup>3</sup> (a) / (a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Notation                                       | SS <sub>c</sub> / SS <sub>c</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Remark                                         | NIOSH. Exprimé en Mn / NIOSH. Als Mn berechnet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                           | www.suva.ch, 01.01.2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| USA - ACGIH - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                     | Manganese, elemental and inorganic compounds, as Mn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| manganese dinitrate (10377-66-9)                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACGIH OEL TWA                                      | 0,02 mg/m³ (R - Respirable particulate matter)<br>0,1 mg/m³ (I - Inhalable particulate matter)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark (ACGIH)                                     | TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Regulatory reference                               | ACGIH 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| nickel dinitrate (13138-45-9)                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| EU - Indicative Occupational Exposure Limit (IOEL) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                         | Nickel nitrate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| IOEL TWA                                           | 0,005 mg/m³ (respirable fraction)<br>0,01 mg/m³ (inhalable fraction)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Remark                                             | (Year of adoption 2011)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                               | SCOEL Recommendations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| EU - Biological Limit Value (BLV)                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                         | Nickel and nickel compounds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                               | SCOEL List of recommended health-based BLVs and BGVs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Austria - Occupational Exposure Limits             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                         | Nickel (Stäube von Nickelmetall, Nickelsulfid und sulfidischen Erzen, Nickeloxide und Nickelcarbonat) und Stäube von Nickelverbindungen und Nickellegierungen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAK (OEL TWA)                                      | 0,5 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| MAK (OEL STEL)                                     | 2 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| TRK (OEL TWA)                                      | 0,5 mg/m³ (als Ni berechnet, E)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| TRK (OEL STEL)                                     | 2 mg/m³ (als Ni berechnet, E, 4x 15(Miw) min)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Remark                                             | Sah. Krebs erzeugend: III A1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                               | BGBI. II Nr. 156/2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Austria - Biological limit values                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Local name                                         | Nickel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| BLV                                                | 7 µg/l Parameter: Nickel - Untersuchungsmaterial: Harn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Remark                                             | Eignung mit vorzeitiger Folgeuntersuchung: Bei Überschreiten des Grenzwertes für Nickel im Harn. Bei Vorliegen einer wesentlichen Beeinträchtigung der Lungenfunktion. Diese ist anzunehmen, wenn nach mehrmaliger Messung der beste gemessene Wert den für den/die Untersuchte/n maßgebenden Sollwert um 20% unterschreitet, bzw. den MEF50-Sollwert um 50% unterschreitet. Eine vorzeitige Folgeuntersuchung ist jedoch nicht erforderlich, wenn im Vergleich zu Vorbefunden der altersabhängige physiologische Abfall der 1 Sekundenkapazität (FEV1) von 40 ml/Jahr nicht überschritten wird oder aus der Beurteilung des Kurvenverlaufes der Forcierten Vitalkapazität (FVC) eine eingeschränkte Mitarbeit des Untersuchten/der Untersuchten ersichtlich ist.<br>Der Zeitabstand zwischen den Untersuchungen beträgt bei Eignung: ein Jahr; bei Eignung mit vorzeitiger Folgeuntersuchung: sechs Monate. |
| Regulatory reference                               | Verordnung über die Gesundheitsüberwachung am Arbeitsplatz 2017 (VGÜ 2017)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| nickel dinitrate (13138-45-9)                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Bulgaria - Biological limit values            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Никел метал, разтворими съединения, никелов сулфат, никелов хром-фосфат (като никел)                                                                                                                                                                                                                                                                                                                                                                                                                          |
| BLV                                           | 45 µg/l Биомаркер за експозиция/биомаркер за ефект: никел - Биологична среда: урина - Време на пробовземане: След няколко работни смени - Специфични ефекти: Няма                                                                                                                                                                                                                                                                                                                                             |
| Regulatory reference                          | Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)                                                                                                                                                                                                                                                                                                                             |
| Croatia - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Nikal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| GVI (OEL TWA)                                 | 0,5 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remark                                        | T (otrovno); Karc. kat. 3 (tvari koje izazivaju zabrinutost zbog mogućeg karcinogenog djelovanja na ljude)                                                                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граничним vrijednostima izloženosti i biološkim граничним vrijednostima (NN 148/2023)                                                                                                                                                                                                                                                                                                                                                |
| Croatia - Biological limit values             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Nikal (topljivi spojevi)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| BLV                                           | 0,17 µmol/l Karakteristični pokazatelj: nikal - Biološki uzorak: plazma - Vrijeme uzorkovanja: na kraju radne smjene<br>10 µg/l Karakteristični pokazatelj: nikal - Biološki uzorak: plazma - Vrijeme uzorkovanja: na kraju radne smjene<br>15,4 µmol/mol creatinine Karakteristični pokazatelj: nikal - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene<br>8 µg/g creatinine Karakteristični pokazatelj: nikal - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граничним vrijednostima izloženosti i biološkim граничним vrijednostima (NN 91/2018)                                                                                                                                                                                                                                                                                                                                                 |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Nikl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| PEL (OEL TWA)                                 | 0,5 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remark                                        | B - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi, S - látka má senzibilizující účinek (s větou H317, H334), P - u látky nelze vyloučit závažné pozdní účinky (s větou H372, H373).                                                                                                                                                                                                                                                                                                     |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Czech Republic - Biological limit values      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Nikl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| BLV                                           | 0,04 mg/g creatinine Ukazatel: Nikl - Biologicky vzorek: moči - Doba odběru: nerozhoduje<br>0,077 µmol/mmol Creatinine Ukazatel: Nikl - Biologicky vzorek: moči - Doba odběru: nerozhoduje                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                          | Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)                                                                                                                                                                                                                                                                                                                                                                                                                                            |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| nickel dinitrate (13138-45-9)                     |                                                                                                                            |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Denmark - Occupational Exposure Limits            |                                                                                                                            |
| Local name                                        | Nikkel, pulver og støv                                                                                                     |
| OEL TWA                                           | 0,05 mg/m³ beregnet som Ni                                                                                                 |
| Remark                                            | K (betyder, at stoffet anses for at kunne være kræftfremkaldende)                                                          |
| Regulatory reference                              | BEK nr 291 af 19/03/2024                                                                                                   |
| Estonia - Occupational Exposure Limits            |                                                                                                                            |
| Local name                                        | Nikkel, metall                                                                                                             |
| OEL TWA                                           | 0,5 mg/m³                                                                                                                  |
| Remark                                            | S (Sensibiliseeriv aine)                                                                                                   |
| Regulatory reference                              | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                               |
| Finland - Occupational Exposure Limits            |                                                                                                                            |
| Local name                                        | Nikkeli, metalli                                                                                                           |
| HTP (OEL TWA)                                     | 0,01 mg/m³                                                                                                                 |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                            |
| Finland - Biological limit values                 |                                                                                                                            |
| Local name                                        | Nikkeli, metalli                                                                                                           |
| BLV                                               | 0,1 µmol/l Parametri: Virtsan nikkeli - Näytteenottoajankohta: Työvuoron päätyttyä työviikon tai altistumisjakson loputtua |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                            |
| France - Occupational Exposure Limits             |                                                                                                                            |
| Local name                                        | Nickel (métal)                                                                                                             |
| VME (OEL TWA)                                     | 1 mg/m³                                                                                                                    |
| Remark                                            | Valeurs recommandées/admises; substance classée cancérogène de catégorie 2                                                 |
| Regulatory reference                              | Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)                                                     |
| Germany - Occupational Exposure Limits (TRGS 900) |                                                                                                                            |
| Local name                                        | Nickel und Nickelverbindungen                                                                                              |
| AGW (OEL TWA)                                     | 0,006 mg/m³ A (mg/m³)                                                                                                      |
| Peak exposure limitation factor                   | 8(II)                                                                                                                      |
| Remark                                            | AGS,10,Sh,Y                                                                                                                |
| Regulatory reference                              | TRGS900                                                                                                                    |
| Germany - Occupational Exposure Limits (TRGS 910) |                                                                                                                            |
| Local name                                        | Nickelverbindungen, als Carc. 1A, Carc. 1B eingestuft                                                                      |
| Acceptable concentration (Weight conc.)           | 6 µg/m³ (A)                                                                                                                |
| Notes                                             | b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000                                                                    |
| Tolerance concentration (Weight conc.)            | 6 µg/m³ (A)                                                                                                                |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| nickel dinitrate (13138-45-9)            |                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tolerance concentration excess factor    | 8                                                                                                                                                                                                                                                                                                                                            |
| Remark                                   | (2) Die Toleranzkonzentration wurde gemäß Nummer 3.2.1 aufgrund einer nicht krebs-erzeugenden Wirkung festgelegt. Bei Überschreitung gelten die gleichen Maßnahmen wie bei Überschreitung des AGW.; (3) Nickelmetall siehe TRGS 900; (4) Die Konzentrationen beziehen sich auf den Elementgehalt des entsprechenden Metalls.; Siehe TRGS 561 |
| Regulatory reference                     | TRGS 910                                                                                                                                                                                                                                                                                                                                     |
| Hungary - Biological Exposure Indices    |                                                                                                                                                                                                                                                                                                                                              |
| Local name                               | Nikkel                                                                                                                                                                                                                                                                                                                                       |
| BEI                                      | 0,003 mg/l Biológiai expozíciós (hatás) mutató: nikkel - Biológiai minta: vizeletben - Mintavétel ideje: mhv., m.v. (munkahét végén, műszak végén)<br>0,051 µmol/l Biológiai expozíciós (hatás) mutató: nikkel - Biológiai minta: vizeletben - Mintavétel ideje: mhv., m.v. (munkahét végén, műszak végén)                                   |
| Regulatory reference                     | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                             |
| Ireland - Biological limit values        |                                                                                                                                                                                                                                                                                                                                              |
| Local name                               | Nickel                                                                                                                                                                                                                                                                                                                                       |
| BMGV                                     | 3 µg/l Parameter: Ni - Medium: urine - Sampling time: After several consecutive working shifts                                                                                                                                                                                                                                               |
| Regulatory reference                     | Biological Monitoring Guidelines (HSA, 2011)                                                                                                                                                                                                                                                                                                 |
| Lithuania - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                              |
| Local name                               | Nikelis                                                                                                                                                                                                                                                                                                                                      |
| IPRV (OEL TWA)                           | 0,5 mg/m³                                                                                                                                                                                                                                                                                                                                    |
| Remark                                   | K (kancerogeninis poveikis); J (jautinantis poveikis)                                                                                                                                                                                                                                                                                        |
| Regulatory reference                     | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)                                                                                                                                                                                                                                                                            |
| Poland - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                                              |
| Local name                               | Nikiel i jego związki, z wyjątkiem tetrakarbonylku niklu (niklu karbonylku) w przeliczeniu na Ni                                                                                                                                                                                                                                             |
| NDS (OEL TWA)                            | 0,25 mg/m³                                                                                                                                                                                                                                                                                                                                   |
| Portugal - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                              |
| Local name                               | Níquel, expresso em Ni Elementar                                                                                                                                                                                                                                                                                                             |
| OEL TWA                                  | 1,5 mg/m³ I (Fração inalável)                                                                                                                                                                                                                                                                                                                |
| Remark                                   | A5 (Agente não suspeito de ser carcinogénico no Homem)                                                                                                                                                                                                                                                                                       |
| Regulatory reference                     | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                                                                |
| Romania - Occupational Exposure Limits   |                                                                                                                                                                                                                                                                                                                                              |
| Local name                               | Nichel și compuși                                                                                                                                                                                                                                                                                                                            |
| OEL TWA                                  | 0,1 mg/m³                                                                                                                                                                                                                                                                                                                                    |
| OEL STEL                                 | 0,5 mg/m³                                                                                                                                                                                                                                                                                                                                    |



Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| nickel dinitrate (13138-45-9)                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Slovenia - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | nikelj – kovina                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OEL TWA                                       | 0,006 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| OEL STEL                                      | 0,048 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Remark                                        | Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                          | Uradni list RS, št. 29/2024 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Spain - Occupational Exposure Limits          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Níquel metal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| VLA-ED (OEL TWA)                              | 1 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Remark                                        | Sen (Sensibilizante), r (Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el “Reglamento (CE) nº 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos” (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Regulatory reference                          | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Sweden - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Nickel, metall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| NGV (OEL TWA)                                 | 0,5 mg/m³ totaldamm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Remark                                        | S (Ämnet är sensibiliserande. Sensibiliserande ämnen kan ge allergi eller annan överkänslighet. Överkänslighetsbesvärerna drabbar främst huden eller andningsorganen. Överkänslighet innebär att man reagerar vid kontakt med ämnen som normalt inte ger besvär. Allergi är en undergrupp av överkänslighet som orsakas av reaktioner i kroppens immunsystem. Särskilt låga gränsvärden har fastställts för ämnen med mer uttalat luftvägssensibiliserande egenskaper. Några ämnen med starkt sensibiliserande egenskaper får endast hanteras efter tillstånd från Arbetsmiljöverket, se föreskrifterna om kemiska arbetsmiljörisker. Dessa ämnen har inga gränsvärden men i vissa fall riktvärden); 3 (Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i Metodserien, Provtagning av totaldamm och respirabelt damm, Metod nr 1010, Arbetskyddsstyrelsen, numera Arbetsmiljöverket. Filterdiameteren är normalt 37 mm, men kan även vara 25 mm. Trots sitt namn provtas inte den totala mängden luftburna partiklar med denna metod) |
| Regulatory reference                          | Hygieniska gränsvärden (AFS 2022:5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Nickel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| WEL TWA (OEL TWA)                             | 0,1 mg/m³ Nickel, water-soluble inorganic compounds (as Ni); United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| nickel dinitrate (13138-45-9)              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                     | Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity), Carc (nickel oxides and sulphides)(Capable of causing cancer and/or heritable genetic damage. See paragraphs 49–51), Sen (nickel sulphate)(Capable of causing occupational asthma. See paragraphs 53–56)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                       | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Iceland - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                 | Nikkel, duft og ryk, sem Ni                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| OEL TWA                                    | 0,05 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Remark                                     | O,K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                       | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Switzerland - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                 | Nickel, sels solubles / Nickelsalze, löslich                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MAK (OEL TWA)                              | 0,05 mg/m <sup>3</sup> (i) / (e)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Notation                                   | S, C1 <sub>A</sub> / S, C1 <sub>A</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remark                                     | NIOSH. Exprimé en Ni / NIOSH. Als Ni berechnet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Regulatory reference                       | www.suva.ch, 01.01.2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| USA - ACGIH - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                 | Nickel, elemental                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ACGIH OEL TWA                              | 0,1 mg/m <sup>3</sup> (Nickel, Soluble inorganic compounds (NOS), as Ni; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Inhalable fraction)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Remark (ACGIH)                             | TLV® Basis: Dermatitis; pneumoconiosis. Notations: A5 (Not Suspected as a Human Carcinogen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                       | ACGIH 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| lead nitrate (10099-74-8)                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| EU - Biological Limit Value (BLV)          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local name                                 | Lead and its inorganic compounds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| BLV                                        | <p>15 µg/100ml Parameter: Pb - Medium: blood - Notations: BBLV. For workers whose blood lead level exceeds the biological limit value of 15 µg Pb/100 ml blood due to exposure which has occurred before 9 April 2026, but is below 30 µg Pb/100 ml blood, medical surveillance is carried out on a regular basis. If a declining trend towards the limit value of 15 µg Pb/100 ml blood is established in those workers, they may be allowed to continue with work involving exposure to lead.</p> <p>30 µg/100ml Until 31 December 2028 - Parameter: Pb - Medium: blood - Notations: BBLV. For workers whose blood lead level exceeds the biological limit value of 30 µg Pb/100 ml blood due to exposure which has occurred before 9 April 2026, but is below 70 µg Pb/100 ml blood, medical surveillance is carried out on a regular basis. If a declining trend towards the limit value of 30 µg Pb/100 ml blood is established in those workers, they may be allowed to continue with work involving exposure to lead.</p> |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| lead nitrate (10099-74-8)              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                 | Medical surveillance is carried out if exposure to a concentration of lead in air is greater than 0,015 mg/m <sup>3</sup> , calculated as a time-weighted average over 40 hours per week, or a blood lead level greater than 9 µg Pb/100 ml blood is measured in individual workers.<br>Medical surveillance is also carried out with regard to female workers of childbearing age whose blood lead level exceeds 4,5 µg Pb/100 ml blood or the national reference value of the general population not occupationally exposed to lead, if such a value exists.                                                                                                                                                    |
| Regulatory reference                   | DIRECTIVE (EU) 2024/869 (amending Directive 2004/37/EC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Austria - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                             | Blei und seine Verbindungen außer Bleiarsenat, Bleichromat, Bleichromatoxid und Alkylbleiverbindungen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| MAK (OEL TWA)                          | 0,1 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| MAK (OEL STEL)                         | 0,4 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Remark                                 | Fortpflanzungsgefährdend: F, D, L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                   | BGBI. II Nr. 156/2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Austria - Biological limit values      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                             | Blei                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| BLV                                    | 10 g/dl Parameter: Hämoglobin - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Frauen<br>12 g/dl Parameter: Hämoglobin - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Männer<br>30 % Parameter: Hämatokrit - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Frauen<br>35 % Parameter: Hämatokrit - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Männer<br>120 µg/100ml Parameter: RCB (EPP) - Untersuchungsmaterial: Blut<br>30 µg/100ml Parameter: Blei - Untersuchungsmaterial: Blut<br>10 mg/l Parameter: ALA-U - Untersuchungsmaterial: Harn - Mitarbeiter/innen: Davis; Männer, Frauen > 50 a<br>6 mg/l Parameter: ALA-U - Untersuchungsmaterial: Harn - Mitarbeiter/innen: Davis; Frauen ≤ 50 a |
| Remark                                 | Eignung: Blut: Erythrozyten: 3,2 Millionen/µl für Frauen, 3,8 Millionen/µl für Männer<br>Eignung mit vorzeitiger Folgeuntersuchung: Bei Überschreiten bzw. Unterschreiten der Grenzwerte im Blut oder im Harn.<br>Der Zeitabstand zwischen den Untersuchungen beträgt bei Eignung: ein Jahr; für Glas- und Akkumulatorenarbeiten drei Monate; für Rostschutzarbeiten (einschließlich Trennen und Schneiden von rostschutzbeschichteten Teilen) vier Wochen, bei Eignung mit vorzeitiger Folgeuntersuchung: drei Monate; für Glas- und Akkumulatorenarbeiten sechs Wochen; für Rostschutzarbeiten zwei Wochen                                                                                                      |
| Regulatory reference                   | Verordnung über die Gesundheitsüberwachung am Arbeitsplatz 2017 (VGÜ 2017)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Bulgaria - Biological limit values     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                             | Олово                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| BLV                                    | 400 µg/l Биомаркер за експозиция/биомаркер за ефект: олово - Биологична среда: кръв - Време на пробовземане - Не се фиксира - Специфични ефекти: Няма<br>300 µg/l Биомаркер за експозиция/биомаркер за ефект: олово - Биологична среда: кръв - Време на пробовземане - Не се фиксира - Специфични ефекти: Няма - Тази стойност е определена за жени на възраст под 45 години (1/10)                                                                                                                                                                                                                                                                                                                               |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| lead nitrate (10099-74-8)                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Remark                                        | Медицинско наблюдение се извършва, ако експозицията на концентрация на олово във въздуха е по-голяма от 0,05 mg/m3, изчислена като средно претеглена във времето стойност за 40 часа седмично, или когато при отделни работници се измерва ниво на олово в кръвта, по-високо от 40 µg Pb/100 ml кръв.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Regulatory reference                          | Наредба № 10 от 26.09.2003 г. за защита на работещите от рискове, свързани с експозиция на канцерогени и мутагени при работа (изм. и доп. ДВ. бр. 28 от 2 Април 2024г.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Croatia - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                    | Olovo i njegovi anorganski spojevi (kao Pb)*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| GVI (OEL TWA)                                 | 0,15 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                        | EU0 (naznaka da se radi o tvarima za koje su utvrđene obvezujuće granične vrijednosti izloženosti prema Direktivi 2003/18/ EC, Direktivi 99/38/EC i Direktivi 98/24/EC); T (otrovno); N (opasno za okoliš); Repr. kat. 1 (tvari za koje se zna da smanjuju plodnost kod ljudi i/ili – tvari za koje se zna da iskazuju razvojnu toksičnost kod ljudi); Repr. kat. 3 (tvari za koje se pretpostavlja da bi mogle smanjiti plodnost kod ljudi i/ili – tvari za koje se pretpostavlja da bi mogle iskazati razvojnu otrovnost kod ljudi)                                                                                                                                                                                                                                                                                                                                                                                       |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Croatia - Biological limit values             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                    | Olovo (elementarno i anorganski spojevi)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| BLV                                           | 400 µg/l Karakteristični pokazatelj: olovo - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično - Napomena: muškarci<br>300 µg/l Karakteristični pokazatelj: olovo - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično - Napomena: žene <45 god<br>15 U/LE Karakteristični pokazatelj: dehidrataza δ – aminolevulinске kiseline - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično<br>2,67 µmol/LE Karakteristični pokazatelj: protoporin u eritrocitima - Biološki uzorak: krv - Vrijeme uzorkovanja: nakon izloženosti tijekom 2-3 mjeseca (uzorak zaštititi od svjetla) - Napomena: interferencija manjka željeza (sideropenična anemija)<br>1,5 mg/LE Karakteristični pokazatelj: protoporin u eritrocitima - Biološki uzorak: krv - Vrijeme uzorkovanja: nakon izloženosti tijekom 2-3 mjeseca (uzorak zaštititi od svjetla) - Napomena: interferencija manjka željeza (sideropenična anemija) |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 91/2018)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                    | Olovo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| PEL (OEL TWA)                                 | 0,05 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| NPK-P (OEL C)                                 | 0,2 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Remark                                        | B(2) - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi (Pro hodnocení expozice u olova je rozhodující výsledek vyšetření plumbémie), T - toxická pro reprodukci kategorie 1A a 1B (s větou H360 včetně příslušných kódů).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Czech Republic - Biological limit values      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Local name                                    | Olovo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

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|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>lead nitrate (10099-74-8)</b>              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| BLV                                           | 15 mg/g creatinine Ukazatel: 5-Aminolevulová kyselina - Biologicky vzorek: moči - Doba odběru: nerozhoduje<br>13 µmol/mmol Creatinine Ukazatel: 5-Aminolevulová kyselina - Biologicky vzorek: moči - Doba odběru: nerozhoduje<br>0,2 mg/g creatinine Ukazatel: Koproporfyryr - Biologicky vzorek: moči - Doba odběru: nerozhoduje<br>0,035 µmol/mmol Creatinine Ukazatel: Koproporfyryr - Biologicky vzorek: moči - Doba odběru: nerozhoduje<br>0,4 mg/l Ukazatel: Olovo - Biologicky vzorek: krvi - Doba odběru: nerozhoduje |
| Remark                                        | Vhodné pro krátkodobé kontinuální expozice osob nepřekračující 30 kalendářních dnů.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                          | Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Denmark - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Bly, pulver, støv, røg og uorganiske forbindelser                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| OEL TWA                                       | 0,05 mg/m³ beregnet som Pb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Remark                                        | E (betyder, at stoffet har en EF-grænseværdi)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                          | BEK nr 291 af 19/03/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Denmark - Biological limit values</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Bly, pulver, støv, røg og uorganiske forbindelser                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| BLV                                           | 20 µg Pb/100 ml blood Stof: bly - Biologisk materiale: blod                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Regulatory reference                          | BEK nr 291 af 19/03/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Estonia - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Plii j aanaorganilised ühendid, (arvutatudpliile) kogutolm                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| OEL TWA                                       | 0,1 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remark                                        | R (Reproduktiivtoksiline aine), 7 (Pliile on kehtestatud ka bioloogiline piirnorm). Pentoolm: 1 (Peentolm koosneb alla 2,5-mikromeetrise läbimõõduga osakestest, mis võivad koos sissehingatava õhuga jõuda kopsualveoolidesse)                                                                                                                                                                                                                                                                                               |
| Regulatory reference                          | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Finland - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Lyijy, metalli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| BOEL TWA                                      | 0,1 mg/m³ Pb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                        | Melu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Regulatory reference                          | HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Finland - Biological limit values</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Local name                                    | Lyijy, metalli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| BLV                                           | 1,4 µmol/l Parametri: Veren lyijy - Näytteenottoajankohta: Vuorokaudenajalla ei merkitystä                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                          | HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>lead nitrate (10099-74-8)</b>                    |                                                                                                                                                                                                                                             |
| <b>France - Occupational Exposure Limits</b>        |                                                                                                                                                                                                                                             |
| VME (OEL TWA)                                       | 0,1 mg/m <sup>3</sup> (Plomb métallique et composés, en Pb; France; Time-weighted average exposure limit 8 h; VRC: Valeur réglementaire contraignante)                                                                                      |
| <b>Germany - Biological limit values (TRGS 903)</b> |                                                                                                                                                                                                                                             |
| Local name                                          | Blei                                                                                                                                                                                                                                        |
| Biological limit value                              | 150 µg/l Parameter: Blei - Untersuchungsmaterial: B = Vollblut - Probenahmezeitpunkt: a) keine Beschränkung - Festlegung/Begründung: 05/2017 AGS                                                                                            |
| Regulatory reference                                | TRGS 903                                                                                                                                                                                                                                    |
| <b>Gibraltar - Occupational Exposure Limits</b>     |                                                                                                                                                                                                                                             |
| Local name                                          | Inorganic lead and its compounds                                                                                                                                                                                                            |
| OEL TWA                                             | 0,15 mg/m <sup>3</sup>                                                                                                                                                                                                                      |
| Regulatory reference                                | Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)                                                                                                                                                              |
| <b>Greece - Occupational Exposure Limits</b>        |                                                                                                                                                                                                                                             |
| Local name                                          | Ανόργανος μόλυβδος και ενώσεις του                                                                                                                                                                                                          |
| OEL TWA                                             | 0,15 mg/m <sup>3</sup>                                                                                                                                                                                                                      |
| Regulatory reference                                | Π.Δ. 339/2001 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους                                                                                                    |
| <b>Hungary - Occupational Exposure Limits</b>       |                                                                                                                                                                                                                                             |
| Local name                                          | ÓLOM és SZERVETLEN VEGYÜLETEI (Pb-ra számítva)                                                                                                                                                                                              |
| AK (OEL TWA)                                        | 0,15 mg/m <sup>3</sup>                                                                                                                                                                                                                      |
| Remark                                              | i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát), BEM (biológiai expozíciós mutató), BHM (biológiai hatásmutató); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik) |
| Regulatory reference                                | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                            |
| <b>Hungary - Biological Exposure Indices</b>        |                                                                                                                                                                                                                                             |
| Local name                                          | Ólom (szervetlen)                                                                                                                                                                                                                           |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| lead nitrate (10099-74-8)                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BEI                                        | <p>300 µg/l Biológiai expozíciós mutató: Ólom - Biológiai minta: vérben - Mintavétel ideje: n.k. (nem kritikus) - Érintettek köre: férfiak és 45 évnél idősebb nők</p> <p>1,5 µmol/l Biológiai expozíciós mutató: Ólom - Biológiai minta: vérben - Mintavétel ideje: n.k. (nem kritikus) - Érintettek köre: férfiak és 45 évnél idősebb nők</p> <p>200 µg/l Biológiai expozíciós mutató: Ólom - Biológiai minta: vérben - Mintavétel ideje: n.k. (nem kritikus) - Érintettek köre: 45 évnél fiatalabb nők</p> <p>1 µmol/l Biológiai expozíciós mutató: Ólom - Biológiai minta: vérben - Mintavétel ideje: n.k. (nem kritikus) - Érintettek köre: 45 évnél fiatalabb nők</p> <p>100 Biológiai hatás mutató: Cink-protoporfirin előszűrésre - Biológiai minta: vérben - Mintavétel ideje: három hónapnál hosszabb expozíció esetén alkalmazható - Érintettek köre: férfiak és 45 évnél idősebb nők - Megjegyzés: határérték túllépése esetén a vérólom koncentráció meghatározása kötelező</p> <p>80 Biológiai hatás mutató: Cink-protoporfirin előszűrésre - Biológiai minta: vérben - Mintavétel ideje: három hónapnál hosszabb expozíció esetén alkalmazható - Érintettek köre: 45 évnél fiatalabb nők - Megjegyzés: határérték túllépése esetén a vérólom koncentráció meghatározása kötelező</p> |
| Regulatory reference                       | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Ireland - Biological limit values          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Local name                                 | Lead and its ionic compounds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| BLV                                        | 70 µg/100ml Parameter: lead - Medium: blood - Notations: Absorption spectrometry or a method giving equivalent results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Remark                                     | Binding biological limit value. Health surveillance is carried out if: a. exposure to a concentration of lead in air is greater than 0.075mg/m <sup>3</sup> , calculated as a time-weighted average over 40 hours per week, or b. a blood-lead level greater than 40µg Pb/100 ml blood is measured in individual employees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Regulatory reference                       | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Netherlands - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Local name                                 | Lood                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| TGG-8u (OEL TWA)                           | 0,15 mg/m <sup>3</sup> (en anorganische loodverbindingen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Remark                                     | (zie tevens artikel 4.19a Arbeidsomstandighedenregeling)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                       | Arbeidsomstandighedenregeling 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Netherlands - Biological limit values      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Local name                                 | Lood en anorganische loodverbindingen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| BLV                                        | 70 µg/100ml Het loodgehalte in het bloed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Regulatory reference                       | Arbeidsomstandighedenregeling 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Portugal - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Local name                                 | Chumbo elementar e compostos inorgânicos , expressos em Pb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| OEL TWA                                    | 0,05 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Remark                                     | A3 (Agente carcinogénico confirmado nos animais de laboratório com relevância desconhecida no Homem); IBE (Índice biológico de exposição)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                       | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| lead nitrate (10099-74-8)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Portugal - Biological Exposure Indices  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Chumbo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| BEI                                     | 30 µg/100ml Parâmetro: Chumbo - Meio: sangue - Momento da amostragem: Não crítico                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Remark                                  | Mulheres em idade de gestação, cujo teor de chumbo no sangue exceda 10 µg/dl, estão em risco de gerar uma criança com um teor de chumbo no sangue superior ao valor de referência de 10 µg/dl do CDC ("Centre for Disease Control"). Se o teor de chumbo no sangue dessas crianças permanecer elevado, podem estar sujeitas a um risco agravado de contrair défices cognitivos. O teor de chumbo no sangue dessas crianças deve ser monitorizado e devem ser tomar medidas para que a exposição ao chumbo seja reduzida |
| Regulatory reference                    | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Romania - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Plumb și compuși (în afară de PbS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| OEL TWA                                 | 0,05 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OEL STEL                                | 0,1 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Slovakia - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| NPHV (OEL TWA)                          | 0,5 mg/m³ inhalovateľná frakcia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Spain - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Plomo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| VLA-ED (OEL TWA)                        | 0,15 mg/m³ elemental<br>0,15 mg/m³ Compuestos inorgánicos de plomo, como Pb                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Remark                                  | k (Véase el Real Decreto 374/2001, de 6 de abril (BOE nº 104 de 1 de mayo de 2001), sobre la protección de la salud y seguridad de los trabajadores contra los riesgos relacionados con los agentes químicos durante el trabajo), VLB® (Agente químico que tiene Valor Límite Biológico específico en este documento), TR1A (Cuando las pruebas utilizadas para la clasificación procedan principalmente de datos en humanos).                                                                                          |
| Regulatory reference                    | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Spain - Biological limit values         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Plomo y sus derivados iónicos                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| BLV                                     | 70 µg/dl Parámetro: Plomo - Medio: Sangre - Momento de muestreo: No crítico - Notas: k                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                    | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Sweden - Occupational Exposure Limits   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Bly, och oorg. föreningar (som Pb)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| NGV (OEL TWA)                           | 0,05 mg/m³ respirabelt damm<br>0,1 mg/m³ inhalerbart damm                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| lead nitrate (10099-74-8)                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                         | B (Ämnet kan orsaka hörselskada. Exponering för ämnet nära det befintliga yrkeshygieniska gränsvärdet och vid samtidig exponering för buller nära insatsvärdet 80 dB kan orsaka hörselskada); M (Medicinska kontroller kan krävas för hantering av ämnet. Se vidare föreskrifterna om medicinska kontroller i arbetslivet. För vissa ämnen ska arbetsgivaren erbjuda läkarundersökning och för andra ämnen gäller krav på periodisk läkarundersökning och tjänstbarhetsbedömning); R (Ämnet är reproduktionsstörande. Med reproduktionsstörande ämnen avses ämnen som kan medföra skadliga effekter på fortplantningsförmågan eller avkommans utveckling); 3 (Med inhalerbar fraktion menas den mängd partiklar, av totalmängden partiklar i luften, som man inandas genom näsa och mun. Den respirabla fraktionen är de inhalerbara partiklar som når längst ner i luftvägarna, till alveolerna i lungorna); 14 (För bly och kadmium finns biologiska gränsvärden. Även kvicksilver kan mätas biologiskt) |
| Regulatory reference                           | Hygieniska gränsvärden (AFS 2018:1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Sweden - Biological limit values               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                     | Bly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| BLV                                            | 0,5 µmol/l Blyhalten i blod för kvinnor under 50 år<br>1,5 µmol/l Blyhalten i blod för kvinnor som har fyllt 50 år och män                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                           | Medicinska kontroller i arbetslivet (AFS 2019:3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| United Kingdom - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| WEL TWA (OEL TWA)                              | 15 mg/cm <sup>3</sup> Lead other than lead alkyls; United Kingdom; Time-weighted average exposure limit 8 h; Occupational exposure limit (Control of lead at work)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Iceland - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                     | Blý, duft, ryk, reykur, ólífræn sambönd, sem Pb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OEL TWA                                        | 0,05 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Regulatory reference                           | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| North Macedonia - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                     | Олово и неговите соединенија (сметано како Pb) освен оловен арсенат, олово хромат и алкилоловни соединенија                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| OEL TWA                                        | 0,1 mg/m <sup>3</sup> (I) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| KTV                                            | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Short time value [mg/m <sup>3</sup> ]          | 0,4 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| lead nitrate (10099-74-8)                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                     | (КТВ) краткотрајна вредност (КТВ) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покусо време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m <sup>3</sup> или во ml/m <sup>3</sup> (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (БАТ) биолошка гранична вредност – праг на биолошка гранична вредност, што значи предупредување на опасна хемиска супстанца и нејзини метаболити во ткивата, телесните течности или издишувањето на воздухот, без оглед на тоа, дали опасната хемиска супстанца е внесена во организмот со вдишување, голтање или преку кожата; (EU) European Union – гранична вредност, определена на ниво на Европската унија |
| Regulatory reference                       | Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Switzerland - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                 | Blei und seine Verbindungen, außer Alkylverbindungen (als Pb berechnet)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| MAK (OEL TWA)                              | 0,1 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| KZGW (OEL STEL)                            | 0,8 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Notation                                   | C2, R1 <sub>A</sub> , SS <sub>B</sub> , B / C2, R1 <sub>A</sub> , SS <sub>B</sub> , B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Remark                                     | e(mg/m <sup>3</sup> ) - B C2 R2 <sub>F</sub> R1 <sub>AD</sub> SS <sub>B</sub> - NS, Blut - HSE, NIOSH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                       | www.suva.ch, 01.01.2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Switzerland - BAT                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                 | Plomb et ses composés (sauf les alcoylés) / Blei und seine Verbindungen (ausser Alkylverbindungen)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| BAT                                        | 100 µg/l (0.48 µmol/l; Paramètre biologique: Plomb (femmes < 45 ans); Substrat d'examen: Sang complet; Moment du prélèvement: Indifférent.) / (0.48 µmol/l; Biologischer Parameter: Blei (Frauen < 45 Jahre); Untersuchungsmaterial: Vollblut; Probennahmezeitpunkt: Keine Beschränkung.)<br>400 µg/l (1.93 µmol/l; Paramètre biologique: Plomb (hommes; femmes > 45 ans); Substrat d'examen: Sang complet; Moment du prélèvement: Indifférent.) / (1.93 µmol/l; Biologischer Parameter: Blei (Männer; Frauen > 45 Jahre); Untersuchungsmaterial: Vollblut; Probennahmezeitpunkt: Keine Beschränkung.)                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remark                                     | Influence de l'environnement. / Umwelteinflüsse.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                       | Ordonnance 832.30 (OPA), article 50 al. 3, www.suva.ch/valeurs-limites / Verordnung 832.30 (VUV), Art. 50 Abs. 3, www.suva.ch/grenzwerte                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| USA - ACGIH - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                 | Lead and inorganic compounds, as Pb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ACGIH OEL TWA                              | 0,05 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remark (ACGIH)                             | TLV® Basis: CNS & PNS impair; hematologic eff. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                       | ACGIH 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                                           |                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>cadmium nitrate (10325-94-7)</b>                       |                                                                                                                                                                                                                                                                                                                                                      |
| <b>EU - Indicative Occupational Exposure Limit (IOEL)</b> |                                                                                                                                                                                                                                                                                                                                                      |
| Local name                                                | Cadmium and its inorganic compounds                                                                                                                                                                                                                                                                                                                  |
| IOEL TWA                                                  | 0,001 mg/m <sup>3</sup> (BOEL. Inhalable fraction)<br>0,004 mg/m <sup>3</sup> (Inhalable fraction. Limit value until 11 July 2027)                                                                                                                                                                                                                   |
| Remark                                                    | Respirable fraction in those Member States that implement, on the date of the entry into force of this Directive, a biomonitoring system with a biological limit value not exceeding 0,002 mg Cd/g creatinine in urine                                                                                                                               |
| Regulatory reference                                      | DIRECTIVE (EU) 2019/983 (amending Directive 2004/37/EC)                                                                                                                                                                                                                                                                                              |
| <b>EU - Binding Occupational Exposure Limit (BOEL)</b>    |                                                                                                                                                                                                                                                                                                                                                      |
| Local name                                                | Cadmium and its inorganic compounds                                                                                                                                                                                                                                                                                                                  |
| BOEL TWA                                                  | 0,001 mg/m <sup>3</sup> (Inhalable fraction)<br>0,004 mg/m <sup>3</sup> (Inhalable fraction. Respirable fraction in those Member States that implement, on the date of the entry into force of this Directive, a biomonitoring system with a biological limit value not exceeding 0,002 mg Cd/g creatinine in urine. Limit value until 11 July 2027) |
| Regulatory reference                                      | DIRECTIVE (EU) 2019/983 (amending Directive 2004/37/EC)                                                                                                                                                                                                                                                                                              |
| <b>EU - Biological Limit Value (BLV)</b>                  |                                                                                                                                                                                                                                                                                                                                                      |
| Local name                                                | Cadmium                                                                                                                                                                                                                                                                                                                                              |
| BLV                                                       | 2 µg/g creatinine Parameter: Cd - Medium: urine                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                                      | SCOEL List of recommended health-based BLVs and BGVs                                                                                                                                                                                                                                                                                                 |
| <b>Austria - Occupational Exposure Limits</b>             |                                                                                                                                                                                                                                                                                                                                                      |
| Local name                                                | Cadmium und seine Verbindungen: Cadmium                                                                                                                                                                                                                                                                                                              |
| TRK (OEL TWA)                                             | 0,004 mg/m <sup>3</sup> (als Cd berechnet, E) (Gilt bis 11.07.2027)<br>0,001 mg/m <sup>3</sup> (als Cd berechnet, E, 4x 15(Miw) min)                                                                                                                                                                                                                 |
| TRK (OEL STEL)                                            | 0,016 mg/m <sup>3</sup> (als Cd berechnet, E) (Gilt bis 11.07.2027)<br>0,004 mg/m <sup>3</sup> (als Cd berechnet, E, 4x 15(Miw) min)                                                                                                                                                                                                                 |
| Remark                                                    | Fortpflanzungsgefährdend: f, d. Krebserzeugend: III A2                                                                                                                                                                                                                                                                                               |
| Regulatory reference                                      | BGBI. II Nr. 156/2021                                                                                                                                                                                                                                                                                                                                |
| <b>Austria - Biological limit values</b>                  |                                                                                                                                                                                                                                                                                                                                                      |
| Local name                                                | Cadmium und seine Verbindungen                                                                                                                                                                                                                                                                                                                       |
| BLV                                                       | 2,5 µg/g creatinine Parameter: Cadmium - Untersuchungsmaterial: Harn                                                                                                                                                                                                                                                                                 |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| cadmium nitrate (10325-94-7)            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                  | <p>Eignung mit vorzeitiger Folgeuntersuchung: Bei Überschreiten des Grenzwertes für Cadmium im Harn. Bei Überschreiten des der angewendeten NAG-Bestimmungsmethode entsprechenden Grenzwertes im Harn. Bei wiederholter Überschreitung des Harngrenzwertes für NAG ist eine fachärztliche Abklärung anzuraten. Bei Vorliegen einer wesentlichen Beeinträchtigung der Lungenfunktion. Diese liegt vor, wenn nach mehrmaliger Messung der beste gemessene Wert den für den/die Untersuchte/n maßgebenden Sollwert um 20% unterschreitet bzw. den MEF50-Sollwert um 50% unterschreitet. Eine vorzeitige Folgeuntersuchung ist jedoch nicht erforderlich, wenn im Vergleich zu Vorbefunden der altersabhängige physiologische Abfall der 1-Sekundenkapazität (FEV1) von 40 ml/Jahr nicht überschritten wird oder aus der Beurteilung des Kurvenverlaufes der Forcierten Vitalkapazität (FVC) eine eingeschränkte Mitarbeit des Untersuchten/der Untersuchten ersichtlich ist.</p> <p>Der Zeitabstand zwischen den Untersuchungen beträgt bei Eignung: ein Jahr; bei Eignung mit vorzeitiger Folgeuntersuchung: sechs Monate. Bei der vorzeitigen Folgeuntersuchung ist nur jener Untersuchungsbefund zu erheben, der die vorzeitige Folgeuntersuchung begründet hat.</p> |
| Regulatory reference                    | Verordnung über die Gesundheitsüberwachung am Arbeitsplatz 2017 (VGÜ 2017)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Belgium - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Local name                              | Cadmium et ses composés (en Cd) # Cadmium en verbindingen, als Cd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| OEL TWA                                 | <p>0,002 mg/m³ (particules alvéolaires) # (inadembare deeltjes)</p> <p>0,004 mg/m³ (particules inhalables, jusqu'au 11 juillet 2027) # (inhaleerbare deeltjes, tot en met 11 juli 2027)</p> <p>0,001 mg/m³ (particules inhalables, à partir du 12 juillet 2027) # (inhaleerbare deeltjes, vanaf 12 juli 2027)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Remark                                  | C: la mention "C" signifie que l'agent en question relève du champ d'application du titre 2 relatif aux agents cancérigènes, mutagènes et reprotoïques du livre VI du code de bien-être au travail. # C: de vermelding "C" betekent dat het betrokken agens valt onder het toepassingsgebied van titel 2 betreffende kankerverwekkende, mutagene en reprotoxische agentia van boek VI van de codex over het welzijn op het werk.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Regulatory reference                    | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Bulgaria - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Local name                              | Кадмий и неговите неорганични съединения                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| OEL TWA                                 | <p>0,004 mg/m³ (До 10 юли 2027 г.)</p> <p>0,001 mg/m³ (Инхалабилна фракция. В сила от 11.07.2027 г.)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Regulatory reference                    | Наредба № 10 от 26.09.2003 г. за защита на работещите от рискове, свързани с експозиция на канцерогени и мутагени при работа (изм. и доп. ДВ. бр. 28 от 2 Април 2024г.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Croatia - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Local name                              | Kadmijevi (nepirofori) spojevi (kao Cd)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| GVI (OEL TWA)                           | 0,025 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remark                                  | T+ (vrlo otrovno); N (opasno za okoliš); Karc. kat. 2 (tvari koje su vjerojatno karcinogene za ljude); Muta. kat. 3 (tvari koje izazivaju zabrinutost zbog mogućeg mutagenog djelovanja na ljude); Repr. kat. 3 (tvari za koje se pretpostavlja da bi mogle smanjiti plodnost kod ljudi i/ili – tvari za koje se pretpostavlja da bi mogle iskazati razvojnu otrovnost kod ljudi)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| cadmium nitrate (10325-94-7)                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regulatory reference                              | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Croatia - Biological limit values                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                        | Kadmij                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| BLV                                               | 0,045 µmol/l Karakteristični pokazatelj: kadmij - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično - Napomena: pušenje značajno povisuje nalaz<br>5 µg/l Karakteristični pokazatelj: kadmij - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično - Napomena: pušenje značajno povisuje nalaz<br>5,03 µmol/mol creatinine Karakteristični pokazatelj: kadmij - Biološki uzorak: mokraća - Vrijeme uzorkovanja: jednokratni uzorak ili mokraća skupljen tijekom 24 sata<br>5 µg/g creatinine Karakteristični pokazatelj: kadmij - Biološki uzorak: mokraća - Vrijeme uzorkovanja: jednokratni uzorak ili mokraća skupljen tijekom 24 sata |
| Regulatory reference                              | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 91/2018)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Czech Republic - Biological limit values          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                        | Kadmium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| BLV                                               | 0,005 mg/g creatinine Ukazatel: Kadmium - Biologicky vzorek: moči - Doba odběru: nerozhoduje<br>0,005 µmol/mmol Creatinine Ukazatel: Kadmium - Biologicky vzorek: moči - Doba odběru: nerozhoduje<br>0,005 mg/l Ukazatel: Kadmium - Biologicky vzorek: krvi - Doba odběru: nerozhoduje<br>0,045 µmol/l Ukazatel: Kadmium - Biologicky vzorek: krvi - Doba odběru: nerozhoduje                                                                                                                                                                                                                                                                           |
| Regulatory reference                              | Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Denmark - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                        | Cadmium, pulver, støv, røg og uorganiske forbindelser                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| OEL TWA                                           | 0,001 mg/m³ beregnet som Cd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Remark                                            | E (betyder, at stoffet har en EU-grænseværdi); K (betyder, at stoffet anses for at kunne være kræftfremkaldende)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Regulatory reference                              | BEK nr 291 af 19/03/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Finland - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                        | Kadmium, metalli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| HTP (OEL TWA)                                     | 0,02 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveystieteisteriö)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Finland - Biological limit values                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                        | Kadmium, metalli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| BLV                                               | 20 nmol/l Parametri: Virtsan kadmium - Näytteenottoajankohta: Työviikon lopulla. Vuorokaudenajalla ei merkitystä.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveystieteisteriö)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Germany - Occupational Exposure Limits (TRGS 910) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                        | Cadmium und Cd-Verbindungen, als Carc.1A, Carc.1B eingestuft                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| <b>cadmium nitrate (10325-94-7)</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acceptable concentration (Weight conc.)       | 0,9 µg/m³ (A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Notes                                         | b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Tolerance concentration (Weight conc.)        | 2 µg/m³ (A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Tolerance concentration excess factor         | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Remark                                        | (2) Die Toleranzkonzentration wurde gemäß Nummer 3.2.1 aufgrund einer nicht krebs-erzeugenden Wirkung festgelegt. Bei Überschreitung gelten die gleichen Maßnahmen wie bei Überschreitung des AGW.; (4) Die Konzentrationen beziehen sich auf den Elementgehalt des entsprechenden Metalls.; Siehe TRGS561; (7) Die Hintergrundkonzentration ist ein vorgefundener Standortfaktor und ist im Rahmen der Gefährdungsbeurteilung (siehe Nummer 4.1) als Konzentration in der Umgebungsluft zu verstehen. Sie kann vom Unternehmen nicht beeinflusst werden und sowohl örtlich auch als zeitlich variieren; siehe TRGS 561 |
| Regulatory reference                          | TRGS 910                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hungary - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | KADIUM ÉS SZERVETLEN VEGYÜLETEI (Cd-ra számítva)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| AK (OEL TWA)                                  | 0,004 mg/m³ respirábilis frakció                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Remark                                        | k(1B) (rákkeltő), BEM (biológiai expozíciós mutató); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik)                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Regulatory reference                          | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hungary - Biological Exposure Indices</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | Kadmium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| BEI                                           | 0,002 mg/g creatinine Biológiai expozíció (hatás) mutató: kadmium - Biológiai minta: vizeletben - Mintavétel ideje: n.k. (nem kritikus)<br>0,002 µmol/mmol Creatinine Biológiai expozíció (hatás) mutató: kadmium - Biológiai minta: vizeletben - Mintavétel ideje: n.k. (nem kritikus)                                                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                          | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Ireland - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | Cadmium and its inorganic compounds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| OEL TWA                                       | 0,001 mg/m³ Limit value from 11 July 2027. I (Inhalable Fraction)<br>0,004 mg/m³ Limit value until 11 July 2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Remark                                        | BOELV (Binding Occupational Exposure Limit Values), Carc.1B (Substances presumed to have carcinogenic potential for humans)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Regulatory reference                          | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Ireland - Biological limit values</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                    | Cadmium and its inorganic compounds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| BMGV                                          | 2 µg/g creatinine Parameter: Cd - Medium: urine - Sampling time: Not critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                          | Biological Monitoring Guidelines (HSA, 2011)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| cadmium nitrate (10325-94-7)               |                                                                                                                                                                                                                                                                                              |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Italy - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                              |
| Local name                                 | Cadmio e suoi composti inorganici                                                                                                                                                                                                                                                            |
| OEL TWA                                    | 0,001 mg/m³ Frazione inalabile<br>0,004 mg/m³ Frazione inalabile. Valore limite fino all' 11 luglio 2027                                                                                                                                                                                     |
| Regulatory reference                       | Allegato XLIII del Decreto Legislativo 4 settembre 2024, n. 135 - Protezione da agenti cancerogeni, mutageni o da sostanze tossiche per la riproduzione                                                                                                                                      |
| Luxembourg - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                              |
| Local name                                 | Cadmium et ses composés inorganiques                                                                                                                                                                                                                                                         |
| OEL TWA                                    | 0,004 mg/m³ Fraction inhalable. Valeur limite jusqu'au 11 juillet 2027<br>0,001 mg/m³ Fraction inhalable                                                                                                                                                                                     |
| Remark                                     | Fraction alvéolaire applicable en cas de mise en œuvre à partir de l'entrée en vigueur du présent règlement grand-ducal d'un système de biosurveillance avec une valeur limite biologique ne dépassant pas 0,002 mg Cd/g de créatinine dans l'urine.                                         |
| Regulatory reference                       | Mémorial A N° 223 de 2021 concernant la protection des salariés contre les risques liés à l'exposition à des agents cancérogènes ou mutagènes au travail                                                                                                                                     |
| Malta - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                              |
| Local name                                 | Cadmium and its inorganic compounds # Kadmju u l-komposti inorganici tiegħu                                                                                                                                                                                                                  |
| OEL TWA                                    | 0,004 mg/m³ (until 11 July 2027 # sal-11 ta' Lulju 2027)<br>0,001 mg/m³ (Inhalable fraction # Frazzjoni inalabbli)                                                                                                                                                                           |
| Remark                                     | Valur limit: 0.004 mg/m3 (Frazzjoni inalbbli. Frazzjoni respirabbli f'dawk l-Istati Membri li, fid-data tad-dhul fis-sehħ ta' din id-Direttiva, jimplimentaw sistema ta' bijomonitoraġġ b'valur limitu bijoloġiku li majaqbiżx 0,002 mg Cd/g ta' kreatinina fl-awrina) sal-11 ta' Lulju 2027 |
| Regulatory reference                       | S.L. 424.22 - Exposure to Carcinogens, Mutagens or Reprotoxic Substances at Work Regulations (L.N. 102 of 2024) # L.S. 424.22 - Regolamenti dwar Espożizzjoni għall-Carcinogens, Mutagens jew Reprotoxic Substances fuq il-Post tax-Xogħol (A.L. 102 tal-2024)                               |
| Netherlands - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                              |
| Local name                                 | Cadmiumchloride                                                                                                                                                                                                                                                                              |
| TGG-8u (OEL TWA)                           | 0,005 mg/m³ (als Cd)                                                                                                                                                                                                                                                                         |
| Remark                                     | Kankerverwekkende stof                                                                                                                                                                                                                                                                       |
| Regulatory reference                       | Arbeidsomstandighedenregeling 2024                                                                                                                                                                                                                                                           |
| Poland - Occupational Exposure Limits      |                                                                                                                                                                                                                                                                                              |
| Local name                                 | Kadm i jego związki nieorganiczne                                                                                                                                                                                                                                                            |
| NDS (OEL TWA)                              | 0,001 mg/m³ w przeliczeniu na Cd – frakcja wdychalna                                                                                                                                                                                                                                         |
| Remark                                     | Frakcja wdychalna – frakcja aerozolu wnikaćca przez nos i usta, która stwarza zagrożenie dla zdrowia po zdeponowaniu w drogach oddechowych.                                                                                                                                                  |
| Regulatory reference                       | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                                                                                                                                                                       |
| Portugal - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                              |
| Local name                                 | Cádmio, elemento e ompostos, expressos em Cd                                                                                                                                                                                                                                                 |



Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                         |                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cadmium nitrate (10325-94-7)            |                                                                                                                                                                                                                                                                                                                                                                         |
| OEL TWA                                 | 0,01 mg/m³<br>0,002 mg/m³ R (Fração respirável)                                                                                                                                                                                                                                                                                                                         |
| Remark                                  | A2 (Agente carcinogénico confirmado nos animais de laboratório com relevância desconhecida no Homem); IBE (Índice biológico de exposição)                                                                                                                                                                                                                               |
| Regulatory reference                    | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                                                                                           |
| Portugal - Biological Exposure Indices  |                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Cádmio e compostos inorgânicos                                                                                                                                                                                                                                                                                                                                          |
| BEI                                     | 5 µg/g creatinine Parâmetro: Cádmio - Meio: urina - Momento da amostragem: Não crítico - Notação: Vb (Valor basal)<br>5 µg/l Parâmetro: Cádmio - Meio: sangue - Momento da amostragem: Não crítico - Notação: Vb (Valor basal)                                                                                                                                          |
| Regulatory reference                    | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                                                                                           |
| Romania - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Cadmiu şi compuşi (exprimaţi în Cd)                                                                                                                                                                                                                                                                                                                                     |
| OEL TWA                                 | 0,05 mg/m³                                                                                                                                                                                                                                                                                                                                                              |
| Remark                                  | C1B - poate provoca apariţia cancerului; M2 - susceptibil de a provoca anomalii genetice; R2 - susceptibil de a dăuna fertilităţii                                                                                                                                                                                                                                      |
| Regulatory reference                    | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)                                                                                                                                                                                                                                                                                                            |
| Slovakia - Biological limit values      |                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Kadmium                                                                                                                                                                                                                                                                                                                                                                 |
| BLV                                     | 2 µg/g creatinine Zist'ovaný faktor: Kadmium - Vyšetrovaný materiál: moč - Čas odberu vzorky: a) žiadne obmedzenie                                                                                                                                                                                                                                                      |
| Regulatory reference                    | Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)                                                                                                                                                                                                                                                                                                                     |
| Slovenia - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | kadmij                                                                                                                                                                                                                                                                                                                                                                  |
| OEL TWA                                 | 0,001 mg/m³<br>0,004 mg/m³                                                                                                                                                                                                                                                                                                                                              |
| Remark                                  | EU                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                    | Uradni list RS, št. 29/2024 z dne 4.4.2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti rakotvornim ali mutagenim snovem                                                                                                                                                                                                                      |
| Spain - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                                                                         |
| VLA-ED (OEL TWA)                        | 0,002 mg/m³ (estabilizado) no pirofórico. Fracción respirable<br>0,01 mg/m³ (pirofórico). Fracción inhalable<br>0,002 mg/m³ (pirofórico). Fracción respirable<br>0,01 mg/m³ Compuestos de cadmio, como Cd, excepto los expresamente indicados. Fracción inhalable<br>0,002 mg/m³ Compuestos de cadmio, como Cd, excepto los expresamente indicados. Fracción respirable |
| Spain - Biological limit values         |                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                              | Cadmio y compuestos inorgánicos                                                                                                                                                                                                                                                                                                                                         |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| cadmium nitrate (10325-94-7)                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BLV                                           | 2 µg/g creatinine Parámetro: Cadmio - Medio: Orina - Momento de muestreo: No crítico - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB)<br>5 µg/l Parámetro: Cadmio - Medio: Sangre - Momento de muestreo: No crítico - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Regulatory reference                          | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Sweden - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Local name                                    | Kadmium, och oorg föreningar (som Cd)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| NGV (OEL TWA)                                 | 0,02 mg/m³ totaldamm<br>0,002 mg/m³ respirabelt damm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                        | C (Ämnet är cancerframkallande. Risk för cancer finns även vid annan exponering än via inandning. För vissa cancerframkallande ämnen som inte har gränsvärden gäller förbud eller tillståndskrav enligt föreskrifterna om kemiska arbetsmiljörisker); M (Medicinska kontroller kan krävas för hantering av ämnet. Se vidare föreskrifterna om medicinska kontroller i arbetslivet. För vissa ämnen ska arbetsgivaren erbjuda läkarundersökning och för andra ämnen gäller krav på periodisk läkarundersökning och tjänstbarhetsbedömning); 3 (Den respirabla fraktionen är de inhalerbara partiklar som når längst ner i luftvägarna, till alveolerna i lungorna. Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i Metodserien, Provtagning av totaldamm och respirabelt damm, Metod nr 1010, Arbetsarkivstyrelsen, numera Arbetsmiljöverket. Filterdiameteren är normalt 37 mm, men kan även vara 25 mm. Trots sitt namn provtas inte den totala mängden luftburna partiklar med denna metod); 14 (För bly och kadmium finns biologiska gränsvärden. Även kvicksilver kan mätas biologiskt) |
| Regulatory reference                          | Hygieniska gränsvärden (AFS 2020:6)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Sweden - Biological limit values              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Local name                                    | Kadmium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| BLV                                           | 75 nmol/l Kadmiumhalten i blod                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Regulatory reference                          | Medicinska kontroller i arbetslivet (AFS 2019:3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Local name                                    | Cadmium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| WEL TWA (OEL TWA)                             | 0,025 mg/m³ and cadmium compounds except cadmium oxide fume, cadmium sulphide and cadmium sulphide pigments (as Cd)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Remark                                        | Carc (Capable of causing cancer and/or heritable genetic damage (cadmium metal, cadmium chloride, fluoride and sulphate))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Regulatory reference                          | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Iceland - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Local name                                    | Kadmíum og ólífræn kadmíum efna-sambönd, reiknað sem kadmíum (Cd)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OEL TWA                                       | 0,03 mg/m³ örfínt ryk (gildir til 11. júlí 2027)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>cadmium nitrate (10325-94-7)</b>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>North Macedonia - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                            | Кадмиум и соединенија (во форма на прав / аеросоли)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| OEL TWA                                               | 0,03 mg/m <sup>3</sup> производство на батерии, производство на цинк, олово и бакар со термички процес, заварување легури на кадмиум; (I) инхалабилна фракција – дел на вкупно суспендирани материи, кои работникот ги вдишува<br>0,015 mg/m <sup>3</sup> Други; (I) инхалабилна фракција – дел на вкупно суспендирани материи, кои работникот ги вдишува                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| KTV                                                   | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Short time value [mg/m <sup>3</sup> ]                 | 0,12 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Remark                                                | (KTV) краткотрајна вредност (КТВ) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покусно време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m <sup>3</sup> или во ml/m <sup>3</sup> (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (TDK) техничко достигнување на концентрацијата – е дадено за канцерогените супстанции и значи концентрација на супстанции во воздухот на работното место, кои можат да се достигнат со достапните техники; (BAT) биолошка гранична вредност – праг на биолошка гранична вредност, што значи предупредување на опасна хемиска супстанца и нејзини метаболити во ткивата, телесните течности или издишувањето на воздухот, без оглед на тоа, дали опасната хемиска супстанца е внесена во организмот со вдишување, голтање или преку кожата |
| Regulatory reference                                  | Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>USA - ACGIH - Occupational Exposure Limits</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                            | Cadmium and compounds, as Cd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ACGIH OEL TWA                                         | 0,01 mg/m <sup>3</sup> (Cadmium, compounds, as Cd; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Cadmium, compounds, as Cd; 0.002 mg/m <sup>3</sup> ; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Respirable fraction)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark (ACGIH)                                        | TLV® Basis: Kidney dam. Notations: A2 (Suspected Human Carcinogen); BEI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Regulatory reference                                  | ACGIH 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>USA - ACGIH - Biological Exposure Indices</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                            | Cadmium and inorganic compounds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| BEI                                                   | 5 µg/g creatinine Parameter: Cadmium - Medium: urine - Sampling time: Not critical - Notations: B<br>5 µg/l Parameter: Casmium - Medium: blood - Sampling time: Not critical - Notations: B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                                  | ACGIH 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>selenious acid (7783-00-8)</b>                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Austria - Occupational Exposure Limits</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Local name                                            | Selen und seine Verbindungen (außer Selenwasserstoff)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| selenious acid (7783-00-8)                    |                                                                                                                                                                                   |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MAK (OEL TWA)                                 | 0,1 mg/m³                                                                                                                                                                         |
| MAK (OEL STEL)                                | 0,3 mg/m³                                                                                                                                                                         |
| Regulatory reference                          | BGBI. II Nr. 156/2021                                                                                                                                                             |
| Belgium - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Sélénium et ses composés (en Se) # Seleen en -verbindingen (als Se)                                                                                                               |
| OEL TWA                                       | 0,2 mg/m³ (Sélénium et ses composés (en Se); Belgium; Time-weighted average exposure limit 8 h)                                                                                   |
| Regulatory reference                          | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                        |
| Bulgaria - Occupational Exposure Limits       |                                                                                                                                                                                   |
| Local name                                    | Селен                                                                                                                                                                             |
| OEL TWA                                       | 0,2 mg/m³ и съединения (като селен)                                                                                                                                               |
| Regulatory reference                          | Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.) |
| Croatia - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Selen                                                                                                                                                                             |
| GVI (OEL TWA)                                 | 0,1 mg/m³                                                                                                                                                                         |
| Remark                                        | T (otrovno)                                                                                                                                                                       |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)                    |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                                   |
| Local name                                    | Selen                                                                                                                                                                             |
| PEL (OEL TWA)                                 | 0,1 mg/m³                                                                                                                                                                         |
| NPK-P (OEL C)                                 | 0,2 mg/m³                                                                                                                                                                         |
| Remark                                        | D - při expozici se významně uplatňuje pronikání faktoru kůží, P - u látky nelze vyloučit závažné pozdní účinky (s větou H372, H373).                                             |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                             |
| Denmark - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Selen og forbindelser                                                                                                                                                             |
| OEL TWA                                       | 0,1 mg/m³ beregnet som Se, se dog hydrogenselenid og selenhexafluorid                                                                                                             |
| Regulatory reference                          | BEK nr 291 af 19/03/2024                                                                                                                                                          |
| Estonia - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Seleen, anorgaanilisedühendid, v.a vesinikseleniid (arvutatudseleenile)                                                                                                           |
| OEL TWA                                       | 0,1 mg/m³                                                                                                                                                                         |
| Regulatory reference                          | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                                      |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| <b>selenious acid (7783-00-8)</b>                        |                                                                                                                                                |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Finland - Occupational Exposure Limits</b>            |                                                                                                                                                |
| Local name                                               | Seleeni                                                                                                                                        |
| HTP (OEL TWA)                                            | 0,1 mg/m <sup>3</sup>                                                                                                                          |
| HTP (OEL STEL)                                           | 0,3 mg/m <sup>3</sup>                                                                                                                          |
| Regulatory reference                                     | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                                |
| <b>Germany - Occupational Exposure Limits (TRGS 900)</b> |                                                                                                                                                |
| Local name                                               | Selen                                                                                                                                          |
| AGW (OEL TWA)                                            | 0,05 mg/m <sup>3</sup> E (mg/m <sup>3</sup> )                                                                                                  |
| Peak exposure limitation factor                          | 1(II)                                                                                                                                          |
| Remark                                                   | DFG,Y                                                                                                                                          |
| Regulatory reference                                     | TRGS900                                                                                                                                        |
| <b>Germany - Biological limit values (TRGS 903)</b>      |                                                                                                                                                |
| Local name                                               | Selen und seine anorganische Verbindungen                                                                                                      |
| Biological limit value                                   | 150 µg/l Parameter: Selen - Untersuchungsmaterial: S = Serum - Probenahmezeitpunkt: a) keine Beschränkung - Festlegung/Begründung: 11/2020 DFG |
| Regulatory reference                                     | TRGS 903                                                                                                                                       |
| <b>Ireland - Occupational Exposure Limits</b>            |                                                                                                                                                |
| Local name                                               | Selenium and compounds, except hydrogen selenide (as Se)                                                                                       |
| OEL TWA                                                  | 0,1 mg/m <sup>3</sup>                                                                                                                          |
| Remark                                                   | Advisory OELV (Advisory Occupational Exposure Limit Values)                                                                                    |
| Regulatory reference                                     | Chemical Agents Code of Practice 2024                                                                                                          |
| <b>Poland - Occupational Exposure Limits</b>             |                                                                                                                                                |
| Local name                                               | Selen i jego związki, z wyjątkiem selanu w przeliczeniu na Se                                                                                  |
| NDS (OEL TWA)                                            | 0,1 mg/m <sup>3</sup>                                                                                                                          |
| NDSch (OEL STEL)                                         | 0,3 mg/m <sup>3</sup>                                                                                                                          |
| Regulatory reference                                     | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                         |
| <b>Portugal - Occupational Exposure Limits</b>           |                                                                                                                                                |
| Local name                                               | Selénio e compostos, expressos em Se                                                                                                           |
| OEL TWA                                                  | 0,2 mg/m <sup>3</sup>                                                                                                                          |
| Regulatory reference                                     | Norma Portuguesa NP 1796:2014                                                                                                                  |
| <b>Romania - Occupational Exposure Limits</b>            |                                                                                                                                                |
| Local name                                               | Seleniu și compuși exprimați în Se                                                                                                             |
| OEL TWA                                                  | 0,1 mg/m <sup>3</sup>                                                                                                                          |
| OEL STEL                                                 | 0,2 mg/m <sup>3</sup>                                                                                                                          |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| selenious acid (7783-00-8)                     |                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Spain - Occupational Exposure Limits           |                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                     | Selenio                                                                                                                                                                                                                                                                                                                                                                                |
| VLA-ED (OEL TWA)                               | 0,1 mg/m <sup>3</sup> elemental<br>0,1 mg/m <sup>3</sup> Compuestos de Selenio, como Se (excepto el Seleniuro de hidrógeno)                                                                                                                                                                                                                                                            |
| Regulatory reference                           | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                          |
| Sweden - Occupational Exposure Limits          |                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                     | Selen, och oorg. föreningar (som Se) utom väteselenid                                                                                                                                                                                                                                                                                                                                  |
| NGV (OEL TWA)                                  | 0,1 mg/m <sup>3</sup> totaldamm                                                                                                                                                                                                                                                                                                                                                        |
| Remark                                         | 3 (Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i Metodserien, Provtagnings av totaldamm och respirabelt damm, Metod nr 1010, Arbetskyddsstyrelsen, numera Arbetsmiljöverket. Filterdiameteren är normalt 37 mm, men kan även vara 25 mm. Trots sitt namn provtas inte den totala mängden luftburna partiklar med denna metod) |
| Regulatory reference                           | Hygieniska gränsvärden (AFS 2018:1)                                                                                                                                                                                                                                                                                                                                                    |
| United Kingdom - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                     | Selenium                                                                                                                                                                                                                                                                                                                                                                               |
| WEL TWA (OEL TWA)                              | 0,1 mg/m <sup>3</sup> and compounds, except hydrogen selenide (as Se)                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                           | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                                  |
| Iceland - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                     | Selen og sambönd þess, sem Se                                                                                                                                                                                                                                                                                                                                                          |
| OEL TWA                                        | 0,1 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                           | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                                                                                                              |
| North Macedonia - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                     | селен и негови соединенија                                                                                                                                                                                                                                                                                                                                                             |
| OEL TWA                                        | 0,1 mg/m <sup>3</sup> (l) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува                                                                                                                                                                                                                                                                        |
| Regulatory reference                           | Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)                                                                                                                                                                                             |
| Switzerland - BAT                              |                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                     | Sélénium / Selen und seine anorganischen Verbindungen                                                                                                                                                                                                                                                                                                                                  |
| BAT                                            | 150 µg/l (2 µmol/l; Paramètre biologique: Sélénium; Substrat d'examen: Sang complet; Moment du prélèvement: Indifférent.) / (2 µmol/l; Biologischer Parameter: Selen; Untersuchungsmaterial: Vollblut; Probennahmezeitpunkt: Keine Beschränkung.)                                                                                                                                      |
| Regulatory reference                           | Ordonnance 832.30 (OPA), article 50 al. 3, www.suva.ch/valeurs-limites / Verordnung 832.30 (VUV), Art. 50 Abs. 3, www.suva.ch/grenzwerte                                                                                                                                                                                                                                               |
| USA - ACGIH - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                     | Selenium and compounds, as Se                                                                                                                                                                                                                                                                                                                                                          |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>selenious acid (7783-00-8)</b>                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ACGIH OEL TWA                                             | 0,2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Remark (ACGIH)                                            | TLV® Basis: Eye & URT irr                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Regulatory reference                                      | ACGIH 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>mercury nitrate (10045-94-0)</b>                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>EU - Indicative Occupational Exposure Limit (IOEL)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                                | Mercury                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| IOEL TWA                                                  | 0,02 mg/m <sup>3</sup> (Mercury, divalent inorganic compounds; EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value)                                                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                                      | COMMISSION DIRECTIVE 2009/161/EU                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>EU - Biological Limit Value (BLV)</b>                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                                | Mercury and inorganic divalent mercury compounds                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| BLV                                                       | 10 µg/l Parameter: Hg - Medium: blood<br>30 µg/g creatinine Parameter: Hg - Medium: urine                                                                                                                                                                                                                                                                                                                                                                                                               |
| Regulatory reference                                      | SCOEL List of recommended health-based BLVs and BGVs                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Austria - Occupational Exposure Limits</b>             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                                | Quecksilber und anorganische Quecksilberverbindungen                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| MAK (OEL TWA)                                             | 0,02 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| MAK (OEL STEL)                                            | 0,08 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                                    | H,Sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                                      | BGBI. II Nr. 156/2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Belgium - Occupational Exposure Limits</b>             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Local name                                                | Mercure (composés alkylés) (en Hg) # Kwik (alkylverbindingen) (als Hg)                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OEL TWA                                                   | 2 mg/m <sup>3</sup> (Mercure et composés inorganiques bivalents du mercure, y compris l'oxyde de mercure et le chlorure mercurique (mesurés comme mercure) (8); Belgium; Time-weighted average exposure limit 8 h)                                                                                                                                                                                                                                                                                      |
| OEL STEL                                                  | 0,03 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remark                                                    | D: La mention D signifie que la résorption de l'agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l'exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l'agent dans l'air. # De vermelding D betekent dat de opname van het agens via de huid, de slijmvliezen of de ogen een belangrijk deel van de totale blootstelling vormt. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht. |
| Regulatory reference                                      | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Bulgaria - Occupational Exposure Limits</b>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| OEL TWA                                                   | 0,05 mg/m <sup>3</sup> Пари на метала в елементно състояние<br>0,1 mg/m <sup>3</sup> Неорганични и арилни съединения<br>0,01 mg/m <sup>3</sup> Органични и алкилни съединения                                                                                                                                                                                                                                                                                                                           |

Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mercury nitrate (10045-94-0)                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Bulgaria - Biological limit values            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Local name                                    | Живак, пари на метала в елементно състояние                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| BLV                                           | 100 µg/l Биомаркер за експозиция/биомаркер за ефект: живак - Биологична среда: урина - Време на пробовземане: Не се фиксира - Специфични ефекти: Няма                                                                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                          | Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)                                                                                                                                                                                                                                                                                                                                                                        |
| Croatia - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Local name                                    | Živa anorganski spojevi (kao Hg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| GVI (OEL TWA)                                 | 0,05 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                        | T (otrovno); N (opasno za okoliš)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)                                                                                                                                                                                                                                                                                                                                                                                           |
| Croatia - Biological limit values             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Local name                                    | Živa (elementarna i anorganski spojevi dvovalentne žive)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| BLV                                           | 0,05 µmol/l Karakteristični pokazatelj: živa - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično<br>10 µg/l Karakteristični pokazatelj: živa - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično<br>16,9 µmol/mol creatinine Karakteristični pokazatelj: živa - Biološki uzorak: mokraća - Vrijeme uzorkovanja: jednokratni uzorak ili mokraća skupljen tijekom 24 sata<br>30 µg/g creatinine Karakteristični pokazatelj: živa - Biološki uzorak: mokraća - Vrijeme uzorkovanja: jednokratni uzorak ili mokraća skupljen tijekom 24 sata |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 91/2018)                                                                                                                                                                                                                                                                                                                                                                                            |
| Czech Republic - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Local name                                    | Rtu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| PEL (OEL TWA)                                 | 0,05 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| NPK-P (OEL C)                                 | 0,15 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remark                                        | B(3) - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi (Při kontrole expozice rtuti a anorganickým sloučeninám dvojmočné rtuti se přihlíží k příslušným biologickým expozičním testům, které doplňují limitní hodnoty expozice na pracovišti), D - při expozici se významně uplatňuje pronikání faktoru kůží, T - toxická pro reprodukci kategorie 1A a 1B (s větou H360 včetně příslušných kódů).                                                                                                                                   |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Czech Republic - Biological limit values      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Local name                                    | Rtuť                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| BLV                                           | 0,1 mg/g creatinine Ukazatel: Rtuť - Biologicky vzorek: moči - Doba odběru: nerozhoduje<br>0,056 µmol/mmol Creatinine Ukazatel: Rtuť - Biologicky vzorek: moči - Doba odběru: nerozhoduje                                                                                                                                                                                                                                                                                                                                                                |
| Regulatory reference                          | Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| mercury nitrate (10045-94-0)                      |                                                                                                                                                                                                                                                                    |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Denmark - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                    |
| Local name                                        | Kviksølv og uorganiske forbindelser inkl. dampe                                                                                                                                                                                                                    |
| OEL TWA                                           | 0,02 mg/m³ beregnet som Hg                                                                                                                                                                                                                                         |
| Remark                                            | E (betyder, at stoffet har en EF-grænseværdi); H (betyder, at stoffet kan optages gennem huden)                                                                                                                                                                    |
| Regulatory reference                              | BEK nr 291 af 19/03/2024                                                                                                                                                                                                                                           |
| Finland - Occupational Exposure Limits            |                                                                                                                                                                                                                                                                    |
| Local name                                        | Elohopea-(II)-nitraatti                                                                                                                                                                                                                                            |
| HTP (OEL TWA)                                     | 0,02 mg/m³ Hg                                                                                                                                                                                                                                                      |
| Remark                                            | lho, melu                                                                                                                                                                                                                                                          |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                                                                                                                                                    |
| Finland - Biological limit values                 |                                                                                                                                                                                                                                                                    |
| Local name                                        | Elohopea-(II)-nitraatti                                                                                                                                                                                                                                            |
| BLV                                               | 140 nmol/l Parametri: Virtsan elohopea - Näytteenottoajankohta: Työpäivän jälkeinen aamu työviikon tai altistumisjakson lopulla.<br>50 nmol/l Parametri: Veren epäorgaaninen elohopea - Näytteenottoajankohta: Työviikon lopulla. Vuorokaudenajalla ei merkitystä. |
| Regulatory reference                              | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                                                                                                                                                    |
| France - Occupational Exposure Limits             |                                                                                                                                                                                                                                                                    |
| Local name                                        | Mercure, en Hg                                                                                                                                                                                                                                                     |
| VME (OEL TWA)                                     | 0,01 mg/m³ (composés alkylés)<br>0,1 mg/m³ (composés arylés et inorganiques)                                                                                                                                                                                       |
| Remark                                            | Valeurs recommandées/admises. Risque de pénétration percutanée                                                                                                                                                                                                     |
| Regulatory reference                              | Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)                                                                                                                                                                                             |
| Germany - Occupational Exposure Limits (TRGS 900) |                                                                                                                                                                                                                                                                    |
| Local name                                        | Quecksilber                                                                                                                                                                                                                                                        |
| AGW (OEL TWA)                                     | 0,02 mg/m³                                                                                                                                                                                                                                                         |
| Peak exposure limitation factor                   | 8(II)                                                                                                                                                                                                                                                              |
| Remark                                            | EU,DFG,,H,Sh                                                                                                                                                                                                                                                       |
| Regulatory reference                              | TRGS900                                                                                                                                                                                                                                                            |
| Germany - Biological limit values (TRGS 903)      |                                                                                                                                                                                                                                                                    |
| Local name                                        | Quecksilber, metallisches und seine anorganischen Verbindungen                                                                                                                                                                                                     |
| Biological limit value                            | 25 µg/g creatinine Parameter: Quecksilber - Untersuchungsmaterial: U = Urin - Probenahmezeitpunkt: a) keine Beschränkung - Festlegung/Begründung: 11/2012 DFG                                                                                                      |
| Remark                                            | 30 µg/l Urin                                                                                                                                                                                                                                                       |
| Regulatory reference                              | TRGS 903                                                                                                                                                                                                                                                           |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| mercury nitrate (10045-94-0)               |                                                                                                                                                                                                                                                                                        |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gibraltar - Occupational Exposure Limits   |                                                                                                                                                                                                                                                                                        |
| Local name                                 | Mercury and divalent inorganic mercury compounds including mercuric oxide and mercuric chloride (measured as mercury)                                                                                                                                                                  |
| OEL TWA                                    | 0,02 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                 |
| Remark                                     | During exposure monitoring for mercury and its divalent inorganic compounds, account should be taken of relevant biological monitoring techniques that complement the IOELV                                                                                                            |
| Regulatory reference                       | Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)                                                                                                                                                                                                         |
| Greece - Occupational Exposure Limits      |                                                                                                                                                                                                                                                                                        |
| Local name                                 | Υδράργυρος και δισθενείς ανόργανες ενώσεις του υδραργύρου, συμπεριλαμβανομένων του οξειδίου του υδραργύρου και του χλωριούχου υδραργύρου (μετρημένες ως υδράργυρος)                                                                                                                    |
| OEL TWA                                    | 0,1 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                  |
| Remark                                     | Η ένδειξη «δέρμα» στις οριακές τιμές επαγγελματικής έκθεσης επισημαίνει το ενδεχόμενο σημαντικής διείσδυσης μέσω του δέρματος.                                                                                                                                                         |
| Regulatory reference                       | Π.Δ. 12/2012 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους                                                                                                                                                |
| Hungary - Biological Exposure Indices      |                                                                                                                                                                                                                                                                                        |
| Local name                                 | Higany (szervetlen)                                                                                                                                                                                                                                                                    |
| BEI                                        | 0,03 mg/g creatinine Biológiai expozíciós (hatás) mutató: higany - Biológiai minta: vizeletben - Mintavétel ideje: n.k. (nem kritikus)<br>0,017 μmol/mmol Creatinine Biológiai expozíciós (hatás) mutató: higany - Biológiai minta: vizeletben - Mintavétel ideje: n.k. (nem kritikus) |
| Regulatory reference                       | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                       |
| Ireland - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                        |
| Local name                                 | Mercury & divalent inorganic mercury compounds                                                                                                                                                                                                                                         |
| OEL TWA                                    | 0,02 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                 |
| OEL STEL                                   | 0,03 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                 |
| Remark                                     | Advisory OELV (Advisory Occupational Exposure Limit Values), Skin (Substances which have the capacity to penetrate intact skin when they come in contact with it and be absorbed into the body. A substantial contribution to the total body burden via dermal exposure is possible)   |
| Regulatory reference                       | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                                  |
| Netherlands - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                        |
| TGG-8u (OEL TWA)                           | 0,02 mg/m <sup>3</sup> (Kwik en tweewaardige anorganische kwikverbindingen (gemeten als kwik); Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value; als Hg)                                                                                |
| Portugal - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                        |
| OEL TWA                                    | 0,1 mg/m <sup>3</sup><br>0,025 mg/m <sup>3</sup>                                                                                                                                                                                                                                       |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| <b>mercury nitrate (10045-94-0)</b>           |                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OEL STEL                                      | 0,03 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                 |
| <b>Portugal - Biological Exposure Indices</b> |                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                    | Mercúrio                                                                                                                                                                                                                                                                                                                                               |
| BEI                                           | 20 µg/g creatinine Parâmetro: Mercúrio - Meio: urina - Momento da amostragem: Inicio do turno                                                                                                                                                                                                                                                          |
| Regulatory reference                          | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                                                                                          |
| <b>Romania - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                    | Mercur                                                                                                                                                                                                                                                                                                                                                 |
| OEL TWA                                       | 0,05 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                 |
| OEL STEL                                      | 0,15 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                 |
| <b>Serbia - Occupational Exposure Limits</b>  |                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                    | жива и двовалентна неорганска једињења живе                                                                                                                                                                                                                                                                                                            |
| OEL TWA                                       | 0 mg/m <sup>3</sup> (мерена као жива)                                                                                                                                                                                                                                                                                                                  |
| Remark                                        | током праћења изложености живи и њеним двовалентним неорганским једињењима треба узети у обзир релевантне технике биолошког мониторинга којима се допуњују индикативне граничне вредности. ЕУ*** – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2009/161/ЕУ (трећа листа) |
| Regulatory reference                          | ПРАВИЛНИК о превентивним мерама за безбедан и здрав рад при излагању хемијским материјама („Службени гласник РС”, бр. 106/09, 117/17 и 107/21)                                                                                                                                                                                                         |
| <b>Spain - Occupational Exposure Limits</b>   |                                                                                                                                                                                                                                                                                                                                                        |
| Local name                                    | Mercurio                                                                                                                                                                                                                                                                                                                                               |
| VLA-ED (OEL TWA)                              | 0,02 mg/m <sup>3</sup> elemental<br>0,02 mg/m <sup>3</sup> Compuestos inorgánicos divalentes de mercurio, como Hg<br>0,01 mg/m <sup>3</sup> Alquil-compuestos, como Hg<br>0,1 mg/m <sup>3</sup> Aril-compuestos, como Hg                                                                                                                               |
| VLA-EC (OEL STEL)                             | 0,03 mg/m <sup>3</sup> Alquil-compuestos, como Hg                                                                                                                                                                                                                                                                                                      |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| mercury nitrate (10045-94-0)          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remark                                | <p>VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país), VLB® (Agente químico que tiene Valor Límite Biológico específico en este documento), Hg (El mercurio es una sustancia con efectos sanitarios acumulativos posiblemente graves. En consecuencia, la evaluación de la exposición debería complementarse con una vigilancia sanitaria con control biológico de acuerdo con el artículo 6 del RD 374/2001), s (Esta sustancia tiene prohibida total o parcialmente su comercialización y uso como fitosanitario y/o como biocida. Para una información detallada acerca de las prohibiciones consúltese: Base de datos de productos biocidas: <a href="http://www.msssi.gob.es/ciudadanos/productos.do?tipo=plaguicidas">http://www.msssi.gob.es/ciudadanos/productos.do?tipo=plaguicidas</a> Base de datos de productos fitosanitarios <a href="http://www.magrama.gob.es/agricultura/pags/fitos/registro/fichas/pdf/Lista_sa.pdf">http://www.magrama.gob.es/agricultura/pags/fitos/registro/fichas/pdf/Lista_sa.pdf</a>, r (Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el "Reglamento (CE) nº 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos" (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido), TR1B (Cuando las pruebas utilizadas para la clasificación procedan principalmente de datos en animales).</p> |
| Regulatory reference                  | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Spain - Biological limit values       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                            | Mercurio elemental y compuestos inorgánicos                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| BLV                                   | <p>30 µg/g creatinine Parámetro: Mercurio inorgánico total - Medio: Orina - Momento de muestreo: Antes de la jornada laboral - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB), M (El consumo de pescado, especialmente de especies de gran tamaño situadas normalmente al final de la cadena trófica, así como de marisco y moluscos bivalvos, puede aumentar considerablemente los niveles sanguíneos de mercurio, como catión de monometilmercurio, y en muy pequeña proporción (menos del 10% del total) los niveles en Orina. Dado que el VLB está definido para mercurio inorgánico total, debe tenerse en cuenta este hecho si el método analítico empleado determina mercurio total, tanto inorgánico como orgánico)</p> <p>10 µg/l Parámetro: Mercurio inorgánico total - Medio: Sangre - Momento de muestreo: Final de la semana laboral - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB), M (El consumo de pescado, especialmente de especies de gran tamaño situadas normalmente al final de la cadena trófica, así como de marisco y moluscos bivalvos, puede aumentar considerablemente los niveles sanguíneos de mercurio, como catión de monometilmercurio, y en muy pequeña proporción (menos del 10% del total) los niveles en Orina. Dado que el VLB está definido para mercurio inorgánico total, debe tenerse en cuenta este hecho si el método analítico empleado determina mercurio total, tanto inorgánico como orgánico)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Regulatory reference                  | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Sweden - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Local name                            | Kviksilver, och oorg. föreningar (som Hg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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| mercury nitrate (10045-94-0)                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NGV (OEL TWA)                                 | 0,02 mg/m³ inhalerbart damm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Remark                                        | B (Ämnet kan orsaka hörselskada. Exponering för ämnet nära det befintliga yrkeshygieniska gränsvärdet och vid samtidig exponering för buller nära insatsvärdet 80 dB kan orsaka hörselskada); M (Medicinska kontroller kan krävas för hantering av ämnet. Se vidare föreskrifterna om medicinska kontroller i arbetslivet. För visa ämnen ska arbetsgivaren erbjuda läkarundersökning och för andra ämnen gäller krav på periodisk läkarundersökning och tjänstbarhetsbedömning); 14 (För bly och kadmium finns biologiska gränsvärden. Även kvicksilver kan mätas biologiskt) |
| Regulatory reference                          | Hygieniska gränsvärden (AFS 2018:1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                    | Mercury                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| WEL TWA (OEL TWA)                             | 0,02 mg/m³ Mercury divalent inorganic compounds including mercuric oxide and mercuric chloride (measured as mercury); United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)                                                                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                          | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| United Kingdom - Biological limit values      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                    | Mercury                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| BMGV                                          | 20 µmol/mol creatinine Parameter: mercury - Medium: urine - Sampling time: Random                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                          | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Iceland - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                    | Kvikasilfur og ólífræn sambönd þess, þar með talin gufa sem Hg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OEL TWA                                       | 0,025 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Remark                                        | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                          | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Norway - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Local name                                    | Kvikksølv og kvikksølvforb. (unntatt alkylforbindelser) (beregnet som Hg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Grenseverdi (OEL TWA)                         | 0,02 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remark                                        | A: Kjemikalier som skal betraktes som at de fremkaller allergi eller annen overfølsomhet i øynene eller luftveier, eller som skal betraktes som at de fremkaller allergi ved hudkontakt; R: Kjemikalier som skal betraktes som reproduksjonstoksiske; G: EU har fastsatt en bindende grenseverdi og/eller anmerkning for stoffet.                                                                                                                                                                                                                                              |
| Regulatory reference                          | FOR-2024-04-05-581                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Switzerland - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAK (OEL TWA)                                 | 0,01 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                               | 0,02 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                               | 0,005 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| KZGW (OEL STEL)                               | 0,16 mg/m³                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                               | 0,04 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| mercury nitrate (10045-94-0)               |                                                                                                                   |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Remark                                     | S B - ZNS, Niere - HSE, NIOSH, OSHA                                                                               |
| USA - ACGIH - Occupational Exposure Limits |                                                                                                                   |
| Local name                                 | Mercury, elemental and inorganic forms, as Hg                                                                     |
| ACGIH OEL TWA                              | 0,025 mg/m³ (Mercury, Inorganic forms, as Hg; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| Remark (ACGIH)                             | TLV® Basis: CNS impair; kidney dam. Notations: Skin; A4 (Not classifiable as a Human Carcinogen); BEI             |
| Regulatory reference                       | ACGIH 2024                                                                                                        |
| USA - ACGIH - Biological Exposure Indices  |                                                                                                                   |
| Local name                                 | Mercury, elemental                                                                                                |
| BEI                                        | 20 µg/g creatinine Parameter: Mercury - Medium: urine - Sampling time: Prior to shift                             |
| Regulatory reference                       | ACGIH 2024                                                                                                        |

## 8.2. Exposure controls

### Appropriate engineering controls

#### Appropriate engineering controls:

Ensure good ventilation of the work station.

### Personal protection equipment

#### Personal protective equipment:

Avoid all unnecessary exposure. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the protective equipment.

#### Personal protective equipment symbol(s):



### Eye and face protection

#### Eye protection:

Safety glasses

### Skin protection

#### Skin and body protection:

Wear suitable protective clothing

#### Hand protection:

Protective gloves

### Respiratory protection

#### Respiratory protection:

[In case of inadequate ventilation] wear respiratory protection.

### Environmental exposure controls

#### Environmental exposure controls:

Avoid release to the environment.

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

|                                                 |                        |
|-------------------------------------------------|------------------------|
| Physical state                                  | : Liquid               |
| Colour                                          | : Not available        |
| Odour                                           | : Not available        |
| Odour threshold                                 | : Not available        |
| Melting point                                   | : Not applicable       |
| Freezing point                                  | : Not available        |
| Boiling point                                   | : Not available        |
| Flammability                                    | : Non flammable.       |
| Lower explosion limit                           | : Not available        |
| Upper explosion limit                           | : Not available        |
| Flash point                                     | : Not available        |
| Auto-ignition temperature                       | : Not available        |
| Decomposition temperature                       | : Not available        |
| pH                                              | : Not available        |
| Viscosity, kinematic                            | : Not available        |
| Solubility                                      | : Miscible with water. |
| Partition coefficient n-octanol/water (Log Kow) | : Not available        |
| Vapour pressure                                 | : Not available        |
| Vapour pressure at 50°C                         | : Not available        |
| Density                                         | : Not available        |
| Relative density                                | : 1,08                 |
| Relative vapour density at 20°C                 | : Not available        |
| Particle characteristics                        | : Not applicable       |

#### 9.2. Other information

No additional information available

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

#### 10.2. Chemical stability

Stable under normal conditions.

#### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

#### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

#### 10.5. Incompatible materials

metals.

#### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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**SECTION 11: Toxicological information**

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

Acute toxicity (oral) : Not classified  
 Acute toxicity (dermal) : Not classified  
 Acute toxicity (inhalation) : Not classified

|                                          |                                |
|------------------------------------------|--------------------------------|
| <b>nitric acid (7697-37-2)</b>           |                                |
| LC50 Inhalation - Rat                    | > 2,65 mg/L air                |
| <b>aluminium nitrate (13473-90-0)</b>    |                                |
| LD50 oral rat                            | > 2000 mg/kg                   |
| LD50 oral                                | 2261 mg/kg bodyweight mouse    |
| LD50 dermal rabbit                       | > 5000 mg/kg                   |
| <b>ammonium metavanadate (7803-55-6)</b> |                                |
| LD50 oral rat                            | 169 mg/kg                      |
| LD50 dermal rat                          | > 2500 mg/kg                   |
| LD50 dermal rabbit                       | 2102 mg/kg                     |
| LC50 Inhalation - Rat                    | 2,51 mg/l/4h                   |
| <b>arsenic acid (7778-39-4)</b>          |                                |
| LD50 oral                                | 149,6 mg/kg bodyweight (mouse) |
| LD50 dermal rabbit                       | 2000 (1583 – 2417) mg/kg       |
| <b>cobalt dinitrate (10141-05-6)</b>     |                                |
| LD50 oral rat                            | 691 mg/kg                      |
| LD50 dermal rat                          | > 2000 mg/kg bodyweight        |
| <b>chromium trinitrate (13548-38-4)</b>  |                                |
| LD50 oral rat                            | 900 – 3010 mg/kg               |
| LC50 Inhalation - Rat                    | < 4,58 mg/L air                |
| <b>copper dinitrate (3251-23-8)</b>      |                                |
| LD50 oral rat                            | 794 mg/kg                      |
| <b>iron trinitrate (10421-48-4)</b>      |                                |
| LD50 oral rat                            | > 2000 mg/kg bodyweight        |
| LD50 dermal rat                          | > 2000 mg/kg bodyweight        |
| LC50 Inhalation - Rat                    | > 2000 mg/kg                   |
| <b>manganese dinitrate (10377-66-9)</b>  |                                |
| LD50 oral rat                            | > 300 mg/kg bodyweight         |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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|                                                       |                             |
|-------------------------------------------------------|-----------------------------|
| <b>nickel dinitrate (13138-45-9)</b>                  |                             |
| LD50 oral rat                                         | 361,9 mg/kg bodyweight      |
| LC50 Inhalation - Rat (Dust/Mist)                     | 2,48 mg/l                   |
| <b>lead nitrate (10099-74-8)</b>                      |                             |
| LD50 oral rat                                         | 4665 mg/kg                  |
| LD50 dermal rat                                       | > 2000 mg/kg                |
| LC50 Inhalation - Rat                                 | > 5,05 mg/L air             |
| <b>cadmium nitrate (10325-94-7)</b>                   |                             |
| LD50 oral rat                                         | 300 mg/kg bodyweight        |
| LD50 oral                                             | 60,2 mg/kg bodyweight mouse |
| <b>selenious acid (7783-00-8)</b>                     |                             |
| LD50 oral rat                                         | 68,1 mg/kg                  |
| <b>mercury nitrate (10045-94-0)</b>                   |                             |
| LD50 oral rat                                         | 26 mg/kg                    |
| LD50 dermal rat                                       | 75 mg/kg                    |
| Skin corrosion/irritation : Causes severe skin burns. |                             |
| <b>nitric acid (7697-37-2)</b>                        |                             |
| pH                                                    | < 1                         |
| <b>aluminium nitrate (13473-90-0)</b>                 |                             |
| pH                                                    | 2 – 4                       |
| <b>cobalt dinitrate (10141-05-6)</b>                  |                             |
| pH                                                    | 4                           |
| <b>chromium trinitrate (13548-38-4)</b>               |                             |
| pH                                                    | 2 – 3                       |
| <b>copper dinitrate (3251-23-8)</b>                   |                             |
| pH                                                    | < 2                         |
| <b>iron trinitrate (10421-48-4)</b>                   |                             |
| pH                                                    | 1,3                         |
| <b>manganese dinitrate (10377-66-9)</b>               |                             |
| pH                                                    | < 2                         |
| <b>nickel dinitrate (13138-45-9)</b>                  |                             |
| pH                                                    | 3,5 – 5,5 (5 %)             |
| <b>lead nitrate (10099-74-8)</b>                      |                             |
| pH                                                    | 3 – 4 (20 %)                |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                         |                                        |
|-----------------------------------------|----------------------------------------|
| <b>selenious acid (7783-00-8)</b>       |                                        |
| pH                                      | 1,5 (20 °C) 50 g/L                     |
| Serious eye damage/irritation           | : Causes serious eye damage.           |
| <b>nitric acid (7697-37-2)</b>          |                                        |
| pH                                      | < 1                                    |
| <b>aluminium nitrate (13473-90-0)</b>   |                                        |
| pH                                      | 2 – 4                                  |
| <b>cobalt dinitrate (10141-05-6)</b>    |                                        |
| pH                                      | 4                                      |
| <b>chromium trinitrate (13548-38-4)</b> |                                        |
| pH                                      | 2 – 3                                  |
| <b>copper dinitrate (3251-23-8)</b>     |                                        |
| pH                                      | < 2                                    |
| <b>iron trinitrate (10421-48-4)</b>     |                                        |
| pH                                      | 1,3                                    |
| <b>manganese dinitrate (10377-66-9)</b> |                                        |
| pH                                      | < 2                                    |
| <b>nickel dinitrate (13138-45-9)</b>    |                                        |
| pH                                      | 3,5 – 5,5 (5 %)                        |
| <b>lead nitrate (10099-74-8)</b>        |                                        |
| pH                                      | 3 – 4 (20 %)                           |
| <b>selenious acid (7783-00-8)</b>       |                                        |
| pH                                      | 1,5 (20 °C) 50 g/L                     |
| Respiratory or skin sensitisation       | : May cause an allergic skin reaction. |
| Germ cell mutagenicity                  | : Not classified                       |
| Carcinogenicity                         | : May cause cancer.                    |
| <b>arsenic acid (7778-39-4)</b>         |                                        |
| IARC group                              | 2B - Possibly carcinogenic to humans   |
| <b>beryllium nitrate (13597-99-4)</b>   |                                        |
| IARC group                              | 1 - Carcinogenic to humans             |
| <b>cobalt dinitrate (10141-05-6)</b>    |                                        |
| IARC group                              | 2B - Possibly carcinogenic to humans   |
| <b>chromium trinitrate (13548-38-4)</b> |                                        |
| IARC group                              | 3 - Not classifiable                   |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                                  |                                                                                        |
|--------------------------------------------------|----------------------------------------------------------------------------------------|
| <b>lead nitrate (10099-74-8)</b>                 |                                                                                        |
| IARC group                                       | 2A - Probably carcinogenic to humans                                                   |
| <b>cadmium nitrate (10325-94-7)</b>              |                                                                                        |
| IARC group                                       | 1 - Carcinogenic to humans                                                             |
| <b>selenious acid (7783-00-8)</b>                |                                                                                        |
| IARC group                                       | 3 - Not classifiable                                                                   |
| <b>mercury nitrate (10045-94-0)</b>              |                                                                                        |
| IARC group                                       | 3 - Not classifiable                                                                   |
| Reproductive toxicity                            | : Not classified                                                                       |
| STOT-single exposure                             | : Not classified                                                                       |
| <b>beryllium nitrate (13597-99-4)</b>            |                                                                                        |
| STOT-single exposure                             | May cause respiratory irritation.                                                      |
| STOT-repeated exposure                           | : Not classified                                                                       |
| <b>nitric acid (7697-37-2)</b>                   |                                                                                        |
| NOAEL (oral, rat, 90 days)                       | 1500 mg/kg bodyweight                                                                  |
| NOAEC (inhalation, rat, gas, 90 days)            | 2,15 ppm                                                                               |
| <b>ammonium metavanadate (7803-55-6)</b>         |                                                                                        |
| NOAEL (oral, rat, 90 days)                       | 1,6 mg/kg bodyweight                                                                   |
| STOT-repeated exposure                           | Causes damage to organs through prolonged or repeated exposure.                        |
| <b>beryllium nitrate (13597-99-4)</b>            |                                                                                        |
| STOT-repeated exposure                           | Causes damage to organs through prolonged or repeated exposure.                        |
| <b>cobalt dinitrate (10141-05-6)</b>             |                                                                                        |
| LOAEC (inhalation, rat, dust/mist/fume, 90 days) | 0,31 mg/L air                                                                          |
| NOAEL (oral, rat, 90 days)                       | 3 mg/kg bodyweight                                                                     |
| <b>manganese dinitrate (10377-66-9)</b>          |                                                                                        |
| STOT-repeated exposure                           | May cause damage to organs through prolonged or repeated exposure.                     |
| <b>nickel dinitrate (13138-45-9)</b>             |                                                                                        |
| STOT-repeated exposure                           | Causes damage to organs through prolonged or repeated exposure.                        |
| <b>lead nitrate (10099-74-8)</b>                 |                                                                                        |
| STOT-repeated exposure                           | May cause damage to organs through prolonged or repeated exposure.                     |
| <b>cadmium nitrate (10325-94-7)</b>              |                                                                                        |
| STOT-repeated exposure                           | Causes damage to organs (bone, kidneys, lungs) through prolonged or repeated exposure. |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                          |                                                                    |
|------------------------------------------|--------------------------------------------------------------------|
| <b>selenious acid (7783-00-8)</b>        |                                                                    |
| STOT-repeated exposure                   | May cause damage to organs through prolonged or repeated exposure. |
| <b>mercury nitrate (10045-94-0)</b>      |                                                                    |
| STOT-repeated exposure                   | May cause damage to organs through prolonged or repeated exposure. |
| Aspiration hazard                        | : Not classified                                                   |
| <b>nitric acid (7697-37-2)</b>           |                                                                    |
| Viscosity, kinematic                     | 0,595 mm <sup>2</sup> /s                                           |
| <b>aluminium nitrate (13473-90-0)</b>    |                                                                    |
| Viscosity, kinematic                     | 0,778 mm <sup>2</sup> /s                                           |
| <b>ammonium metavanadate (7803-55-6)</b> |                                                                    |
| Viscosity, kinematic                     | Not applicable                                                     |

### 11.2. Information on other hazards

No additional information available

## SECTION 12: Ecological information

### 12.1. Toxicity

|                                                           |                                                                                   |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------|
| Ecology - general                                         | : Before neutralisation, the product may represent a danger to aquatic organisms. |
| Hazardous to the aquatic environment, short-term (acute)  | : Not classified                                                                  |
| Hazardous to the aquatic environment, long-term (chronic) | : Not classified                                                                  |

|                                          |                                               |
|------------------------------------------|-----------------------------------------------|
| <b>nitric acid (7697-37-2)</b>           |                                               |
| EC50 - Crustacea [1]                     | 180 mg/l Daphnia magna (Water flea)           |
| Threshold limit - Algae [1]              | > 19 mg/l                                     |
| <b>aluminium nitrate (13473-90-0)</b>    |                                               |
| LC50 - Fish [1]                          | 58,4 mg/l Oncorhynchus mykiss (Rainbow trout) |
| EC50 - Crustacea [1]                     | 4,3 mg/l Daphnia magna (Water flea)           |
| EC50 72h - Algae [1]                     | 0,24 mg/l Pseudokirchneriella subcapitata     |
| NOEC (chronic)                           | 1,3 mg/l Daphnia magna (Water flea)           |
| <b>ammonium metavanadate (7803-55-6)</b> |                                               |
| LC50 - Fish [1]                          | 693 µg/l Leuciscus idus (golden orfe)         |
| EC50 - Crustacea [1]                     | 1,52 mg/l Daphnia magna (Water flea)          |
| <b>arsenic acid (7778-39-4)</b>          |                                               |
| LC50 - Fish [1]                          | 28 mg/l Oncorhynchus mykiss (Rainbow trout)   |
| EC50 - Crustacea [1]                     | 3,26 mg/l Daphnia magna (Water flea)          |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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|                                         |                                                                    |
|-----------------------------------------|--------------------------------------------------------------------|
| <b>arsenic acid (7778-39-4)</b>         |                                                                    |
| LOEC (chronic)                          | 0,01 mg/l Daphnia pulex                                            |
| NOEC (chronic)                          | > 1 mg/l Daphnia pulex                                             |
| NOEC chronic fish                       | 0,97 mg/l Pimephales promelas (Fathead minnow)                     |
| <b>beryllium nitrate (13597-99-4)</b>   |                                                                    |
| LC50 - Fish [1]                         | 8 mg/l                                                             |
| EC50 - Crustacea [1]                    | 18 mg/l (24h)                                                      |
| <b>cobalt dinitrate (10141-05-6)</b>    |                                                                    |
| LC50 - Fish [1]                         | 1,5 mg/l (mg Co/L) Oncorhynchus mykiss (Rainbow trout)             |
| EC50 - Crustacea [1]                    | 5,89 mg/l Daphnia magna (Water flea)                               |
| <b>chromium trinitrate (13548-38-4)</b> |                                                                    |
| LC50 - Fish [1]                         | 20,1 mg/l Oncorhynchus mykiss (Rainbow trout)                      |
| EC50 96h - Algae [1]                    | 0,4 mg/l Scenedesmus capricornutum                                 |
| EC50 96h - Algae [2]                    | 1,21 mg/l Scenedesmus capricornutum                                |
| <b>copper dinitrate (3251-23-8)</b>     |                                                                    |
| LC50 - Fish [1]                         | 68 – 94 µg/l Oncorhynchus mykiss (Rainbow trout)                   |
| EC50 - Crustacea [1]                    | 0,0338 – 0,792 mg/l Daphnia magna (Water flea)                     |
| EC50 72h - Algae [1]                    | 18 – 46 µg/L Pseudokirchneriella subcapitata                       |
| <b>iron trinitrate (10421-48-4)</b>     |                                                                    |
| LC50 - Fish [1]                         | 0,88 mg/l (mg Fe / L) Salvelinus fontinalis                        |
| EC50 - Crustacea [1]                    | > 18 mg/l Daphnia magna (Water flea)                               |
| LOEC (chronic)                          | 13 mg/l Daphnia magna (Water flea)                                 |
| NOEC (chronic)                          | 8,1 mg/l Daphnia magna (Water flea)                                |
| <b>manganese dinitrate (10377-66-9)</b> |                                                                    |
| LC50 - Fish [1]                         | 55,26 – 67,71 mg/l (Catla catla ; Labeo rohita ; Cirrhina mrigala) |
| EC50 - Crustacea [1]                    | > 100 mg/l Daphnia magna (Water flea)                              |
| EC50 72h - Algae [1]                    | 61 mg/l Desmodesmus subspicatus                                    |
| <b>nickel dinitrate (13138-45-9)</b>    |                                                                    |
| LC50 - Fish [1]                         | 0,4 mg/l (mg Ni/L) Pimephales promelas (Fathead minnow)            |
| EC50 - Crustacea [1]                    | 0,013 mg/l (mg Ni/L) Ceriodaphnia dubia                            |
| <b>lead nitrate (10099-74-8)</b>        |                                                                    |
| LC50 - Fish [1]                         | 40,8 – 3597,9 µg/l (µg Pb/L) Pimephales promelas (Fathead minnow)  |
| EC50 - Crustacea [1]                    | 26,4 µg/l (µg Pb/L) Ceriodaphnia dubia                             |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                                                                                                                                                                                                                                                                         |                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| <b>cadmium nitrate (10325-94-7)</b>                                                                                                                                                                                                                                                     |                                                |
| LC50 - Fish [1]                                                                                                                                                                                                                                                                         | 34 µg/l Salmo Salar                            |
| EC50 - Crustacea [1]                                                                                                                                                                                                                                                                    | 0,04 mg/l Daphnia magna (Water flea)           |
| <b>selenious acid (7783-00-8)</b>                                                                                                                                                                                                                                                       |                                                |
| LC50 - Fish [1]                                                                                                                                                                                                                                                                         | 2060 µg/l Pimephales promelas (Fathead minnow) |
| EC50 - Crustacea [1]                                                                                                                                                                                                                                                                    | 0,43 mg/l Daphnia magna (Water flea)           |
| <b>mercury nitrate (10045-94-0)</b>                                                                                                                                                                                                                                                     |                                                |
| EC50 - Crustacea [1]                                                                                                                                                                                                                                                                    | 0,0052 mg/l Daphnia magna (Water flea)         |
| <b>12.2. Persistence and degradability</b>                                                                                                                                                                                                                                              |                                                |
| <b>Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211</b> |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |
| <b>nitric acid (7697-37-2)</b>                                                                                                                                                                                                                                                          |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |
| <b>aluminium nitrate (13473-90-0)</b>                                                                                                                                                                                                                                                   |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |
| <b>ammonium metavanadate (7803-55-6)</b>                                                                                                                                                                                                                                                |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Adsorbs into the soil.                         |
| <b>arsenic acid (7778-39-4)</b>                                                                                                                                                                                                                                                         |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |
| <b>beryllium nitrate (13597-99-4)</b>                                                                                                                                                                                                                                                   |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |
| <b>cobalt dinitrate (10141-05-6)</b>                                                                                                                                                                                                                                                    |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |
| <b>chromium trinitrate (13548-38-4)</b>                                                                                                                                                                                                                                                 |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |
| <b>copper dinitrate (3251-23-8)</b>                                                                                                                                                                                                                                                     |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |
| <b>iron trinitrate (10421-48-4)</b>                                                                                                                                                                                                                                                     |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |
| <b>manganese dinitrate (10377-66-9)</b>                                                                                                                                                                                                                                                 |                                                |
| Persistence and degradability                                                                                                                                                                                                                                                           | Rapidly degradable                             |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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|                                                 |                      |
|-------------------------------------------------|----------------------|
| <b>nickel dinitrate (13138-45-9)</b>            |                      |
| Persistence and degradability                   | Rapidly degradable   |
| <b>lead nitrate (10099-74-8)</b>                |                      |
| Persistence and degradability                   | Rapidly degradable   |
| <b>cadmium nitrate (10325-94-7)</b>             |                      |
| Persistence and degradability                   | Rapidly degradable   |
| <b>selenious acid (7783-00-8)</b>               |                      |
| Persistence and degradability                   | Rapidly degradable   |
| <b>mercury nitrate (10045-94-0)</b>             |                      |
| Persistence and degradability                   | Rapidly degradable   |
| <b>12.3. Bioaccumulative potential</b>          |                      |
| <b>nitric acid (7697-37-2)</b>                  |                      |
| Partition coefficient n-octanol/water (Log Pow) | -2,3                 |
| <b>aluminium nitrate (13473-90-0)</b>           |                      |
| Bioaccumulative potential                       | Not bioaccumulative. |
| <b>arsenic acid (7778-39-4)</b>                 |                      |
| Bioaccumulative potential                       | bioaccumulable.      |
| <b>beryllium nitrate (13597-99-4)</b>           |                      |
| Bioaccumulative potential                       | Not bioaccumulative. |
| <b>iron trinitrate (10421-48-4)</b>             |                      |
| Bioaccumulative potential                       | Not bioaccumulative. |
| <b>lead nitrate (10099-74-8)</b>                |                      |
| Bioaccumulative potential                       | bioaccumulable.      |
| <b>cadmium nitrate (10325-94-7)</b>             |                      |
| Bioaccumulative potential                       | bioaccumulable.      |
| <b>selenious acid (7783-00-8)</b>               |                      |
| Bioaccumulative potential                       | bioaccumulable.      |
| <b>mercury nitrate (10045-94-0)</b>             |                      |
| Bioaccumulative potential                       | bioaccumulable.      |
| <b>12.4. Mobility in soil</b>                   |                      |

No additional information available

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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### 12.5. Results of PBT and vPvB assessment

| Component                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII  | nitric acid (7697-37-2), aluminium nitrate (13473-90-0), ammonium metavanadate (7803-55-6)( <sup>1</sup> ), arsenic acid (7778-39-4)( <sup>1</sup> ), beryllium nitrate (13597-99-4), cobalt dinitrate (10141-05-6)( <sup>1</sup> ), chromium trinitrate (13548-38-4)( <sup>1</sup> ), copper dinitrate (3251-23-8)( <sup>1</sup> ), iron trinitrate (10421-48-4)( <sup>1</sup> ), manganese dinitrate (10377-66-9)( <sup>1</sup> ), nickel dinitrate (13138-45-9)( <sup>1</sup> ), lead nitrate (10099-74-8)( <sup>1</sup> ), cadmium nitrate (10325-94-7)( <sup>1</sup> ), selenious acid (7783-00-8)( <sup>1</sup> ), mercury nitrate (10045-94-0)( <sup>1</sup> ) |
| Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII | nitric acid (7697-37-2), aluminium nitrate (13473-90-0), ammonium metavanadate (7803-55-6)( <sup>1</sup> ), arsenic acid (7778-39-4)( <sup>1</sup> ), beryllium nitrate (13597-99-4), cobalt dinitrate (10141-05-6)( <sup>1</sup> ), chromium trinitrate (13548-38-4)( <sup>1</sup> ), copper dinitrate (3251-23-8)( <sup>1</sup> ), iron trinitrate (10421-48-4)( <sup>1</sup> ), manganese dinitrate (10377-66-9)( <sup>1</sup> ), nickel dinitrate (13138-45-9)( <sup>1</sup> ), lead nitrate (10099-74-8)( <sup>1</sup> ), cadmium nitrate (10325-94-7)( <sup>1</sup> ), selenious acid (7783-00-8)( <sup>1</sup> ), mercury nitrate (10045-94-0)( <sup>1</sup> ) |

(<sup>1</sup>) Substance(s) in concentration below 0.1 % and displayed on a voluntary basis

### 12.6. Endocrine disrupting properties

No additional information available

### 12.7. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

|                                            |                                                                                                                                    |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Regional waste regulation                  | : Disposal must be done according to official regulations.                                                                         |
| Waste treatment methods                    | : Dispose of contents/container in accordance with licensed collector's sorting instructions.                                      |
| Sewage disposal recommendations            | : Disposal must be done according to official regulations.                                                                         |
| Product/Packaging disposal recommendations | : Dispose in a safe manner in accordance with local/national regulations. Disposal must be done according to official regulations. |
| Additional information                     | : Do not re-use empty containers.                                                                                                  |

## SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

| ADR                                                       | IMDG                                                      | IATA                                                      | ADN                                                       | RID                                                       |
|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| <b>14.1. UN number or ID number</b>                       |                                                           |                                                           |                                                           |                                                           |
| UN 3264                                                   | UN 3264                                                   | UN 3264                                                   | UN 3264                                                   | UN 3264                                                   |
| <b>14.2. UN proper shipping name</b>                      |                                                           |                                                           |                                                           |                                                           |
| CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid) | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid) | Corrosive liquid, acidic, inorganic, n.o.s. (nitric acid) | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid) | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid) |

**Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211**

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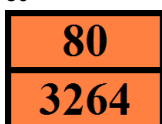
according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

| ADR                                                                               | IMDG                                                                                                        | IATA                                                                              | ADN                                                                                 | RID                                                                                 |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Transport document description</b>                                             |                                                                                                             |                                                                                   |                                                                                     |                                                                                     |
| UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid), 8, II, (E)     | UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid), 8, II                                    | UN 3264 Corrosive liquid, acidic, inorganic, n.o.s. (nitric acid), 8, II          | UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid), 8, II            | UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid), 8, II            |
| <b>14.3. Transport hazard class(es)</b>                                           |                                                                                                             |                                                                                   |                                                                                     |                                                                                     |
| 8                                                                                 | 8                                                                                                           | 8                                                                                 | 8                                                                                   | 8                                                                                   |
|  |                            |  |  |  |
| <b>14.4. Packing group</b>                                                        |                                                                                                             |                                                                                   |                                                                                     |                                                                                     |
| II                                                                                | II                                                                                                          | II                                                                                | II                                                                                  | II                                                                                  |
| <b>14.5. Environmental hazards</b>                                                |                                                                                                             |                                                                                   |                                                                                     |                                                                                     |
| Dangerous for the environment: No                                                 | Dangerous for the environment: No<br>Marine pollutant: No<br>EmS-No. (Fire): F-A<br>EmS-No. (Spillage): S-B | Dangerous for the environment: No                                                 | Dangerous for the environment: No                                                   | Dangerous for the environment: No                                                   |
| No supplementary information available                                            |                                                                                                             |                                                                                   |                                                                                     |                                                                                     |

**14.6. Special precautions for user**

**Overland transport**

Classification code (ADR) : C1  
 Special provisions (ADR) : 274  
 Limited quantities (ADR) : 1I  
 Excepted quantities (ADR) : E2  
 Packing instructions (ADR) : P001, IBC02  
 Mixed packing provisions (ADR) : MP15  
 Portable tank and bulk container instructions (ADR) : T11  
 Portable tank and bulk container special provisions (ADR) : TP2, TP27  
 Tank code (ADR) : L4BN  
 Vehicle for tank carriage : AT  
 Transport category (ADR) : 2  
 Hazard identification number (Kemler No.) : 80  
 Orange plates :



Tunnel restriction code (ADR) : E  
 EAC code : 2X  
 APP code : B

**Transport by sea**

Special provisions (IMDG) : 274  
 Limited quantities (IMDG) : 1 L



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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|                                 |             |
|---------------------------------|-------------|
| Excepted quantities (IMDG)      | : E2        |
| Packing instructions (IMDG)     | : P001      |
| IBC packing instructions (IMDG) | : IBC02     |
| Tank instructions (IMDG)        | : T11       |
| Tank special provisions (IMDG)  | : TP2, TP27 |
| Stowage category (IMDG)         | : B         |
| Stowage and handling (IMDG)     | : SW2       |

### Air transport

|                                              |        |
|----------------------------------------------|--------|
| PCA Excepted quantities (IATA)               | : E2   |
| PCA Limited quantities (IATA)                | : Y840 |
| PCA limited quantity max net quantity (IATA) | : 0.5L |
| PCA packing instructions (IATA)              | : 851  |
| PCA max net quantity (IATA)                  | : 1L   |
| CAO packing instructions (IATA)              | : 855  |
| CAO max net quantity (IATA)                  | : 30L  |
| Special provisions (IATA)                    | : A3   |
| ERG code (IATA)                              | : 8L   |

### Inland waterway transport

|                                   |          |
|-----------------------------------|----------|
| Classification code (ADN)         | : C1     |
| Special provisions (ADN)          | : 274    |
| Limited quantities (ADN)          | : 1 L    |
| Excepted quantities (ADN)         | : E2     |
| Carriage permitted (ADN)          | : T      |
| Equipment required (ADN)          | : PP, EP |
| Number of blue cones/lights (ADN) | : 0      |

### Rail transport

|                                                           |               |
|-----------------------------------------------------------|---------------|
| Classification code (RID)                                 | : C1          |
| Special provisions (RID)                                  | : 274         |
| Limited quantities (RID)                                  | : 1L          |
| Excepted quantities (RID)                                 | : E2          |
| Packing instructions (RID)                                | : P001, IBC02 |
| Mixed packing provisions (RID)                            | : MP15        |
| Portable tank and bulk container instructions (RID)       | : T11         |
| Portable tank and bulk container special provisions (RID) | : TP2, TP27   |
| Tank codes for RID tanks (RID)                            | : L4BN        |
| Transport category (RID)                                  | : 2           |
| Colis express (express parcels) (RID)                     | : CE6         |
| Hazard identification number (RID)                        | : 80          |

## 14.7. Maritime transport in bulk according to IMO instruments

Not applicable

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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### SECTION 15: Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

##### EU-Regulations

##### REACH Annex XVII (Restriction List)

| EU restriction list (REACH Annex XVII) |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reference code                         | Applicable on                                                                                                                                                                                                                                                                                  | Entry title or description                                                                                                                                                                                                                                                                                        |
| 18.                                    | mercury nitrate                                                                                                                                                                                                                                                                                | Mercury compounds                                                                                                                                                                                                                                                                                                 |
| 19.                                    | arsenic acid                                                                                                                                                                                                                                                                                   | Arsenic compounds                                                                                                                                                                                                                                                                                                 |
| 23.                                    | cadmium nitrate                                                                                                                                                                                                                                                                                | Cadmium and its compounds                                                                                                                                                                                                                                                                                         |
| 27.                                    | nickel dinitrate                                                                                                                                                                                                                                                                               | Nickel and its compounds                                                                                                                                                                                                                                                                                          |
| 28.                                    | cobalt dinitrate ; nickel dinitrate                                                                                                                                                                                                                                                            | Substances which are classified as carcinogen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 1 or Appendix 2, respectively.                                                                                                                                   |
| 3(a)                                   | nitric acid                                                                                                                                                                                                                                                                                    | Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F          |
| 3(b)                                   | Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211 ; nitric acid | Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10 |
| 63.                                    | lead nitrate                                                                                                                                                                                                                                                                                   | Lead and its compounds                                                                                                                                                                                                                                                                                            |
| 65.                                    | ammonium metavanadate                                                                                                                                                                                                                                                                          | Inorganic ammonium salts                                                                                                                                                                                                                                                                                          |

##### REACH Annex XIV (Authorisation List)

Contains substance(s) listed on REACH Annex XIV: Arsenic acid (EC 231-901-9, CAS 7778-39-4)

##### REACH Candidate List (SVHC)

Contains substance(s) listed on the REACH Candidate List in concentrations  $\geq 0.1\%$  or SCL: Cobalt(II) dinitrate (EC 233-402-1, CAS 10141-05-6)

Contains substance(s) listed on the REACH Candidate List  $< 0.1\%$  or SCL: Arsenic acid (EC 231-901-9, CAS 7778-39-4), Lead dinitrate (EC 233-245-9, CAS 10099-74-8).

##### PIC Regulation (Prior Informed Consent)

Contains substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals): arsenic acid (7778-39-4), lead dinitrate (10099-74-8), cadmium nitrate (10325-94-7), mercury dinitrate (10045-94-0)

##### POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

##### Ozone Regulation (2024/590)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 2024/590 on substances that deplete the ozone layer)

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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### Council Regulation (EC) for the control of dual-use items

Contains substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items: Beryllium nitrate (13597-99-4).

### Explosives Precursors Regulation (2019/1148)

Contains substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

#### ANNEX I RESTRICTED EXPLOSIVES PRECURSORS

List of substances which are not to be made available to, or introduced, possessed or used by, members of the general public, whether on their own or in mixtures or substances that include those substances, unless the concentration is equal to or lower than the limit values set out in column 2, and for which suspicious transactions and significant disappearances and thefts are to be reported within 24 hours.

| Name        | CAS-No.   | Limit value | Upper limit value for licensing under Article 5(3) | Combined Nomenclature (CN) code for a separate chemically defined compound meeting the requirements of Note 1 to Chapter 28 or 29 of the CN, respectively | Combined Nomenclature code for mixture without constituents which would determine classification under another CN code |
|-------------|-----------|-------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Nitric acid | 7697-37-2 | 3 % w/w     | 10% w/w                                            | ex 2808 00 00                                                                                                                                             | ex 3824 99 96                                                                                                          |

### Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

### National regulations

#### France

| Occupational diseases |                                                                                                                          |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------|
| Code                  | Description                                                                                                              |
| RG 1                  | Conditions caused by lead and its compounds                                                                              |
| RG 2                  | Occupational diseases caused by mercury and its compounds                                                                |
| RG 20                 | Occupational diseases caused by arsenic and its mineral compounds                                                        |
| RG 20 BIS             | Primary bronchial cancer caused by inhalation of arsenical dust or vapors                                                |
| RG 37                 | Professional skin disorders caused by oxides and nickel salts                                                            |
| RG 37 BIS             | Respiratory disorders caused by oxides and nickel salts                                                                  |
| RG 61                 | Occupational diseases caused by cadmium and its compounds                                                                |
| RG 61 BIS             | Bronchopulmonary cancer caused by the inhalation of dusts or fumes containing cadmium                                    |
| RG 70                 | Occupational diseases caused by cobalt and its compounds                                                                 |
| RG 70 BIS             | Respiratory disorders due to sintered or fused metal carbide dust containing cobalt                                      |
| RG 70 TER             | Primary broncho-pulmonary cancer caused by inhalation of cobalt dust associated with tungsten carbide prior to sintering |
| RG 75                 | Occupational diseases resulting from exposure to selenium and its mineral derivatives                                    |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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### Germany

- VOC ordinance (ChemVOCFarbV) :
- Water hazard class (WGK) : WGK 2, Significantly hazardous to water (Classification according to AwSV, Annex 1).
- Chemicals Prohibition Ordinance (ChemVerbotsV) : This product is subject to ChemVerbotsV Annex 2 Entry 1. The following requirements must be observed: authorization requirement (according to § 6 paragraph 1 sentence 1), basic requirements for carrying out the delivery (according to § 8 paragraph 1, 3 and 4), identification and documentation (according to § 9 paragraph 1 to 3) and exclusion of the shipping route (according to § 10).
- Hazardous Incident Ordinance (12. BImSchV) : Is not subject to the Hazardous Incident Ordinance (12. BImSchV)

### Netherlands

- ABM category : Z(2) - biodegradable substances with hazardous properties for humans and the environment (carcinogenicity/ mutagenicity/reprotoxicity/bioaccumulative potential or toxicity)
- SZW-lijst van kankerverwekkende stoffen : ammonium metavanadate, cobalt dinitrate, nickel dinitrate, cadmium nitrate are listed
- SZW-lijst van mutagene stoffen : ammonium metavanadate, cadmium nitrate are listed
- SZW-lijst van reprotoxische stoffen – Borstvoeding : nickel dinitrate is listed
- SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : cobalt dinitrate, manganese dinitrate, nickel dinitrate, lead nitrate are listed
- SZW-lijst van reprotoxische stoffen – Ontwikkeling : manganese dinitrate, nickel dinitrate, lead nitrate are listed

### Denmark

- Danish National Regulations : Young people below the age of 18 years are not allowed to use the product  
Pregnant/breastfeeding women working with the product must not be in direct contact with the product  
The requirements from the Danish Working Environment Authorities regarding work with carcinogens must be followed during use and disposal

### Poland

- Polish National Regulations : Act of 25 February 2011 on chemical substances and their mixtures (J. o L. No. 63, item 322 as amended; consolidated text J. o L. 2019, item 1225).  
Act of 14 December 2012 on waste (J. o L. 2013, item 322 as amended; consolidated text J. o L. 2020, item 797).  
The announcement of Marshal of the Sejm of the Republic of Poland dated 19 October 2016 concerning the consolidated text announcement of the decree on the management of packaging and packaging waste (J. o L. 2016, item 1863 as amended).  
Decree of the Minister of Environment of 14 December 2014 on the catalogue of waste (J. o L. 2014, item 1923).  
Act of 19 August 2011 on the Carriage of Dangerous Goods (J. o L. 2011 No. 227, item 1367 as amended; consolidated text J. o L. 2020, item 154).  
Regulation of the Minister of Family, Labour and Social Policy of 12 June 2018 on the highest permissible concentration and intensity of noxious agents for health at work environment (J. o L. item 1286 as amended).  
The announcement of Minister of Health dated 9 September 2016 concerning the consolidated text announcement of the decree of the Minister of Health of 30 December 2004 on health and safety at work related to exposure to chemical agents at work (J. o L. of 16 September 2016, item 1488)  
Regulation of the Minister of Health of 2 February 2011 on tests and measurements of the noxious agents for health at work environment (J. o L. No. 33, item 166 as amended).  
Regulation of the Minister of Environment of 9 December 2003 on particularly hazardous substances to the environment (J. o L. No. 217, item 2141).  
ADR Agreement: Government Statement of 13 March 2023 on the entry into force of amendments to Annexes A and B to the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), signed in Geneva on 30 September 1957 (J. o. L. 2023, item 891)

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out

### SECTION 16: Other information

#### Indication of changes

| Section | Changed item                               | Comments |
|---------|--------------------------------------------|----------|
| 4.1     | First-aid measures for first aider         | Added    |
| 4.2     | Symptoms/effects after inhalation          | Added    |
| 5.1     | Unsuitable extinguishing media             | Added    |
| 5.2     | Explosion hazard                           | Added    |
| 5.2     | Fire hazard                                | Added    |
| 5.3     | Firefighting instructions                  | Added    |
| 6.1     | Emergency procedures                       | Added    |
| 6.1     | Protective equipment                       | Added    |
| 6.1     | General measures                           | Added    |
| 6.3     | For containment                            | Added    |
| 7.1     | Additional hazards when processed          | Added    |
| 7.2     | Technical measures                         | Added    |
| 7.2     | Packaging materials                        | Added    |
| 7.2     | Storage conditions                         | Modified |
| 13.1    | Sewage disposal recommendations            | Added    |
| 13.1    | Additional information                     | Added    |
| 13.1    | Regional waste regulation                  | Added    |
| 13.1    | Product/Packaging disposal recommendations | Modified |
| 15.1    | REACH Annex XVII                           | Modified |
| 16      | Abbreviations and acronyms                 | Modified |

#### Abbreviations and acronyms:

|       |                                                                                                 |
|-------|-------------------------------------------------------------------------------------------------|
| ACGIH | American Conference of Government Industrial Hygienists                                         |
| ADN   | European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways |
| ADR   | European Agreement concerning the International Carriage of Dangerous Goods by Road             |
| ATE   | Acute Toxicity Estimate                                                                         |
| BCF   | Bioconcentration factor                                                                         |
| BLV   | Biological limit value                                                                          |
| BOD   | Biochemical oxygen demand (BOD)                                                                 |

# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| Abbreviations and acronyms: |                                                                              |
|-----------------------------|------------------------------------------------------------------------------|
| CAS-No.                     | Chemical Abstract Service number                                             |
| CLP                         | Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008  |
| COD                         | Chemical oxygen demand (COD)                                                 |
| CSA                         | Chemical safety assessment                                                   |
| DMEL                        | Derived Minimal Effect level                                                 |
| DNEL                        | Derived-No Effect Level                                                      |
| EC-No.                      | European Community number                                                    |
| EC50                        | Median effective concentration                                               |
| ED                          | Endocrine disruptor                                                          |
| EN                          | European Standard                                                            |
| EWC                         | European waste catalogue                                                     |
| IARC                        | International Agency for Research on Cancer                                  |
| IATA                        | International Air Transport Association                                      |
| IMDG                        | International Maritime Dangerous Goods                                       |
| LC50                        | Median lethal concentration                                                  |
| LD50                        | Median lethal dose                                                           |
| LOAEL                       | Lowest Observed Adverse Effect Level                                         |
| Log Kow                     | Partition coefficient n-octanol/water (Log Kow)                              |
| Log Pow                     | Partition coefficient n-octanol/water (Log Pow)                              |
| MAK                         | maximum workplace concentration                                              |
| NOAEC                       | No-Observed Adverse Effect Concentration                                     |
| NOAEL                       | No-Observed Adverse Effect Level                                             |
| NOEC                        | No-Observed Effect Concentration                                             |
| N.O.S.                      | Not Otherwise Specified                                                      |
| OECD                        | Organisation for Economic Co-operation and Development                       |
| OEL                         | Occupational Exposure Limit                                                  |
| OSHA                        | Occupational Safety Health Administration                                    |
| PBT                         | Persistent Bioaccumulative Toxic                                             |
| PNEC                        | Predicted No-Effect Concentration                                            |
| PPE                         | Personal protection equipment                                                |
| RID                         | Regulations concerning the International Carriage of Dangerous Goods by Rail |
| SDS                         | Safety Data Sheet                                                            |
| STP                         | Sewage treatment plant                                                       |
| TF                          | Technical function                                                           |
| ThOD                        | Theoretical oxygen demand (ThOD)                                             |

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| Abbreviations and acronyms: |                                          |
|-----------------------------|------------------------------------------|
| TLM                         | Median Tolerance Limit                   |
| TWA                         | Time Weighted Average                    |
| VOC                         | Volatile Organic Compounds               |
| vPvB                        | Very Persistent and Very Bioaccumulative |
| UFI                         | Unique Formula Identifier                |

| Full text of H- and EUH-statements: |                                                                    |
|-------------------------------------|--------------------------------------------------------------------|
| Acute Tox. 1 (Dermal)               | Acute toxicity (dermal), Category 1                                |
| Acute Tox. 1 (Inhalation)           | Acute toxicity (inhal.), Category 1                                |
| Acute Tox. 2 (Inhalation)           | Acute toxicity (inhal.), Category 2                                |
| Acute Tox. 2 (Oral)                 | Acute toxicity (oral), Category 2                                  |
| Acute Tox. 3 (Inhalation)           | Acute toxicity (inhal.), Category 3                                |
| Acute Tox. 3 (Oral)                 | Acute toxicity (oral), Category 3                                  |
| Acute Tox. 4 (Dermal)               | Acute toxicity (dermal), Category 4                                |
| Acute Tox. 4 (Inhalation)           | Acute toxicity (inhal.), Category 4                                |
| Acute Tox. 4 (Inhalation:dust,mist) | Acute toxicity (inhalation:dust,mist) Category 4                   |
| Acute Tox. 4 (Oral)                 | Acute toxicity (oral), Category 4                                  |
| Acute Tox. Not classified (Oral)    | Acute toxicity (oral) Not classified                               |
| Aquatic Acute 1                     | Hazardous to the aquatic environment – Acute Hazard, Category 1    |
| Aquatic Acute Not classified        | Hazardous to the aquatic environment – Acute Hazard Not classified |
| Aquatic Chronic 1                   | Hazardous to the aquatic environment – Chronic Hazard, Category 1  |
| Aquatic Chronic 2                   | Hazardous to the aquatic environment – Chronic Hazard, Category 2  |
| Aquatic Chronic 4                   | Hazardous to the aquatic environment – Chronic Hazard, Category 4  |
| Carc. 1A                            | Carcinogenicity, Category 1A                                       |
| Carc. 1B                            | Carcinogenicity (inhalation) Category 1B                           |
| Carc. 2                             | Carcinogenicity, Category 2                                        |
| Eye Dam. 1                          | Serious eye damage/eye irritation, Category 1                      |
| Eye Irrit. 2                        | Serious eye damage/eye irritation, Category 2                      |
| Met. Corr. 1                        | Corrosive to metals, Category 1                                    |
| Muta. 1B                            | Germ cell mutagenicity, Category 1B                                |
| Muta. 2                             | Germ cell mutagenicity, Category 2                                 |
| Ox. Liq. 2                          | Oxidising Liquids, Category 2                                      |
| Ox. Liq. 3                          | Oxidising Liquids, Category 3                                      |

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| Full text of H- and EUH-statements: |                                                                                            |
|-------------------------------------|--------------------------------------------------------------------------------------------|
| Ox. Sol. 2                          | Oxidising Solids, Category 2                                                               |
| Ox. Sol. 3                          | Oxidising Solids, Category 3                                                               |
| Repr. 1A                            | Reproductive toxicity, Category 1A                                                         |
| Repr. 1B                            | Reproductive toxicity, Category 1B                                                         |
| Repr. 2                             | Reproductive toxicity, Category 2                                                          |
| Resp. Sens. 1                       | Respiratory sensitisation, Category 1                                                      |
| Skin Corr. 1A                       | Skin corrosion/irritation, Category 1, Sub-Category 1A                                     |
| Skin Corr. 1B                       | Skin corrosion/irritation, Category 1, Sub-Category 1B                                     |
| Skin Corr. 1C                       | Skin corrosion/irritation, Category 1, Sub-Category 1C                                     |
| Skin Irrit. 2                       | Skin corrosion/irritation, Category 2                                                      |
| Skin Sens. 1                        | Skin sensitisation, Category 1                                                             |
| Skin Sens. 1A                       | Skin sensitisation, category 1A                                                            |
| Skin Sens. 1B                       | Skin sensitisation, category 1B                                                            |
| STOT RE 1                           | Specific target organ toxicity – Repeated exposure, Category 1                             |
| STOT RE 2                           | Specific target organ toxicity – Repeated exposure, Category 2                             |
| STOT RE Not classified              | Specific target organ toxicity (repeated exposure) Not classified                          |
| STOT SE 3                           | Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation |
| H272                                | May intensify fire; oxidiser.                                                              |
| H290                                | May be corrosive to metals.                                                                |
| H300                                | Fatal if swallowed.                                                                        |
| H301                                | Toxic if swallowed.                                                                        |
| H302                                | Harmful if swallowed.                                                                      |
| H310                                | Fatal in contact with skin.                                                                |
| H312                                | Harmful in contact with skin.                                                              |
| H314                                | Causes severe skin burns and eye damage.                                                   |
| H315                                | Causes skin irritation.                                                                    |
| H317                                | May cause an allergic skin reaction.                                                       |
| H318                                | Causes serious eye damage.                                                                 |
| H319                                | Causes serious eye irritation.                                                             |
| H330                                | Fatal if inhaled.                                                                          |
| H331                                | Toxic if inhaled.                                                                          |
| H332                                | Harmful if inhaled.                                                                        |
| H334                                | May cause allergy or asthma symptoms or breathing difficulties if inhaled.                 |
| H335                                | May cause respiratory irritation.                                                          |
| H340                                | May cause genetic defects.                                                                 |



# Trace Metals 1 - 15 components; Al 500mg/l ; V 250mg/l ; As 100mg/l ; Be 100mg/l ; Co 100mg/l ; Cr 100mg/l ; Cu 100mg/l ; Fe 100mg/l ; Mn 100mg/l ; Ni 100mg/l ; Pb 100mg/l ; Zn 100mg/l ; Cd 25mg/l ; Se 25mg/l ; Hg 10mg/l in HNO3 5% Equivalent to Perkin Elmer Ref: N9300211

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| Full text of H- and EUH-statements: |                                                                    |
|-------------------------------------|--------------------------------------------------------------------|
| H341                                | Suspected of causing genetic defects.                              |
| H350                                | May cause cancer.                                                  |
| H350i                               | May cause cancer by inhalation.                                    |
| H351                                | Suspected of causing cancer.                                       |
| H360D                               | May damage the unborn child.                                       |
| H360Df                              | May damage the unborn child. Suspected of damaging fertility.      |
| H360FD                              | May damage fertility. May damage the unborn child.                 |
| H361d                               | Suspected of damaging the unborn child.                            |
| H361f                               | Suspected of damaging fertility.                                   |
| H372                                | Causes damage to organs through prolonged or repeated exposure.    |
| H373                                | May cause damage to organs through prolonged or repeated exposure. |
| H400                                | Very toxic to aquatic life.                                        |
| H410                                | Very toxic to aquatic life with long lasting effects.              |
| H411                                | Toxic to aquatic life with long lasting effects.                   |
| H413                                | May cause long lasting harmful effects to aquatic life.            |

| Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]: |      |                       |
|---------------------------------------------------------------------------------------------------------------------------|------|-----------------------|
| Met. Corr. 1                                                                                                              | H290 | On basis of test data |
| Skin Corr. 1B                                                                                                             | H314 | Calculation method    |
| Eye Dam. 1                                                                                                                | H318 | Calculation method    |
| Skin Sens. 1                                                                                                              | H317 | Calculation method    |
| Carc. 1B                                                                                                                  | H350 | Calculation method    |

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.