

Safety Data Sheet

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

Reference number: EQ0002

Issue date: 07.09.2016 Revision date: 21.08.2023 Supersedes version of: 26.12.2017 Version: 1.2

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

1.1. Product identifier

Product form : Mixture
Trade name : Multi-element calibration standard 2A for ICP MS, 28 components
Product code : EQ0002

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

1.2.1. 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

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Spectracer UK Ltd.

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London,
W1U 7HW,
United Kingdom.

Tel: +44 (0) 207 193 9114

Fax: +44 (0) 203 432 4686

Email: contact@spectracer.co.uk

Web: www.spectracer.com

1.4. Emergency telephone number

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

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

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

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Adverse physicochemical, human health and environmental effects

May be corrosive to metals. Causes severe skin burns and eye damage. Causes serious eye damage.

2.2. Label elements

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

Hazard pictograms (CLP)



GHS05

Signal word (CLP)

: Danger

Contains

: nitric acid; silver nitrate; aluminium nitrate; arsenic acid; barium nitrate; beryllium nitrate; calcium nitrate; cadmium nitrate; cobalt dinitrate; chromium trinitrate; cesium nitrate; copper dinitrate; iron trinitrate; gallium trinitrate, hydrate; mercury nitrate; potassium nitrate; lithium nitrate; magnesium nitrate; manganese dinitrate; sodium nitrate; nickel dinitrate; lead nitrate; rubidium nitrate; selenious acid; strontium nitrate; thallium nitrate; uranyl acetate dihydrate; ammonium metavanadate; zinc nitrate

Hazard statements (CLP)

: H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.

Precautionary statements (CLP)

: 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.
P390 - Absorb spillage to prevent material damage.

EUH-statements

: EUH208 - Contains nickel dinitrate. May produce an allergic reaction.

2.3. Other hazards

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

Component	
nitric acid (7697-37-2)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
silver nitrate (7761-88-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
aluminium nitrate (13473-90-0)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
arsenic acid (7778-39-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
barium nitrate (10022-31-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
beryllium nitrate (13597-99-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
cadmium nitrate (10325-94-7)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
cobalt dinitrate (10141-05-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
chromium trinitrate (13548-38-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

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Component	
copper dinitrate (3251-23-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
iron trinitrate (10421-48-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
mercury nitrate (10045-94-0)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
potassium nitrate (7757-79-1)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
lithium nitrate (7790-69-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
manganese dinitrate (10377-66-9)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
nickel dinitrate (13138-45-9)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
lead nitrate (10099-74-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
selenious acid (7783-00-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
strontium nitrate (10042-76-9)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
thallium nitrate (10102-45-1)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
uranyl acetate dihydrate (6159-44-0)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
ammonium metavanadate (7803-55-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

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 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 at a concentration equal to or greater than 0,1 %

Component	
cobalt dinitrate(10141-05-6)	The substance is 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
arsenic acid(7778-39-4)	The substance is 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
lead nitrate(10099-74-8)	The substance is 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

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

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3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
nitric acid 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, PL, PT, RO, SE, SI, SK, AL, IS, NO, MK, RS, CH, TR); substance with a Community workplace exposure limit	CAS-No.: 7697-37-2 EC-No.: 231-714-2 EC Index-No.: 007-004-00-1 REACH-no: 01-2119487297-23-XXXX	5 – 10	Ox. Liq. 2, H272 Met. Corr. 1, H290 Acute Tox. 1 (Inhalation), H330 Skin Corr. 1A, H314 Eye Dam. 1, H318
beryllium nitrate substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, FR, GB, HR, HU, IE, LV, PL, PT, RO, SE, SI, SK, IS, MK, CH); substance with a Community workplace exposure limit	CAS-No.: 13597-99-4 EC-No.: 237-062-5 EC Index-No.: 004-002-00-2	< 0,05	Ox. Sol. 2, H272 Acute Tox. 3 (Oral), H301 Acute Tox. 2 (Inhalation), H330 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Carc. 1B, H350i STOT SE 3, H335 STOT RE 1, H372 Aquatic Chronic 2, H411
aluminium nitrate substance with national workplace exposure limit(s) (AT, BE, BG, DE, DK, EE, FR, GB, GR, HR, HU, IE, LV, SE, NO, CH)	CAS-No.: 13473-90-0 EC-No.: 236-751-8	< 0,05	Eye Dam. 1, H318
lithium nitrate substance with national workplace exposure limit(s) (DE, SE, CH)	CAS-No.: 7790-69-4 EC-No.: 232-218-9	< 0,05	Ox. Sol. 3, H272 Acute Tox. 4 (Oral), H302 Eye Irrit. 2, H319
chromium trinitrate substance with national workplace exposure limit(s) (AT, BE, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, LT, LU, MT, NL, PL, PT, RO, SE, SI, SK, AL, IS, CH); substance with a Community workplace exposure limit	CAS-No.: 13548-38-4 EC-No.: 236-921-1	< 0,05	Ox. Sol. 3, H272 Acute Tox. Not classified (Oral) Acute Tox. 4 (Inhalation), H332 Skin Sens. 1A, H317 Aquatic Chronic 2, H411
iron trinitrate substance with national workplace exposure limit(s) (BE, DK, ES, GB, GR, HR, IE, PT, IS, NO, CH)	CAS-No.: 10421-48-4 EC-No.: 233-899-5 REACH-no: 01-2119978293-27-XXXX	< 0,05	Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute Not classified
manganese dinitrate substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, HR, HU, IE, LV, NL, PL, PT, RO, SE, SI, SK, IS, NO, MK, CH); substance with a Community workplace exposure limit	CAS-No.: 10377-66-9 EC-No.: 233-828-8	< 0,05	Ox. Sol. 2, H272 Acute Tox. 4 (Oral), H302 Skin Corr. 1C, H314 Eye Dam. 1, H318 STOT RE 2, H373 Aquatic Chronic 4, H413
cobalt dinitrate substance listed as REACH Candidate (Cobalt(II) dinitrate) substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, GB, GR, HR, HU, IE, LV, NL, PL, PT, RO, SE, SK, IS, CH)	CAS-No.: 10141-05-6 EC-No.: 233-402-1 EC Index-No.: 027-009-00-2	< 0,05	Ox. Sol. 2, H272 Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318 Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1B, H350i Repr. 1B, H360FD STOT RE Not classified Aquatic Acute 1, H400 Aquatic Chronic 1, H410

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
nickel dinitrate substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, FR, GB, HR, HU, IE, LT, LV, PL, PT, RO, SE, SI, IS, CH); substance with a Community workplace exposure limit	CAS-No.: 13138-45-9 EC-No.: 236-068-5 EC Index-No.: 028-012-00-1	< 0,05	Ox. Sol. 2, H272 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Dam. 1, H318 Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1A, H350i Repr. 1B, H360D STOT RE 1, H372 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410
copper dinitrate 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, SK, IS, NO, CH); substance with a Community workplace exposure limit	CAS-No.: 3251-23-8 EC-No.: 221-838-5	< 0,05	Ox. Sol. 2, H272 Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 2, H411
potassium nitrate substance with national workplace exposure limit(s) (BG, LT, LV)	CAS-No.: 7757-79-1 EC-No.: 231-818-8 REACH-no: 01-2119488224-35-XXXX	< 0,05	Ox. Sol. 3, H272
strontium nitrate substance with national workplace exposure limit(s) (LT)	CAS-No.: 10042-76-9 EC-No.: 233-131-9	< 0,05	Ox. Sol. 1, H271 Eye Dam. 1, H318 STOT RE 2, H373
ammonium metavanadate substance with national workplace exposure limit(s) (AT, CZ, LV, NL, SI, NO)	CAS-No.: 7803-55-6 EC-No.: 232-261-3	< 0,05	Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Inhalation:dust,mist), H332 Eye Irrit. 2, H319 Repr. 2, H361d STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 2, H411
cadmium nitrate substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, ES, FI, FR, GB, HR, HU, IE, IT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK, IS, MK); substance with a Community workplace exposure limit	CAS-No.: 10325-94-7 EC-No.: 233-710-6 EC Index-No.: 048-001-00-5	< 0,05	Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Dermal), H312 Acute Tox. 2 (Inhalation), H330 Muta. 1B, H340 Carc. 1B, H350 Repr. 1B, H360FD STOT RE 1, H372 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410
arsenic acid substance listed as REACH Candidate substance listed in REACH Annex XIV substance with national workplace exposure limit(s) (AT, BE, CZ, DE, DK, EE, ES, FI, GB, HR, HU, IE, IT, LT, NL, PL, PT, RO, SE, SI, SK, IS, NO, MK, CH); substance with a Community workplace exposure limit	CAS-No.: 7778-39-4 EC-No.: 231-901-9 EC Index-No.: 033-005-00-1	< 0,05	Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Dermal), H312 Acute Tox. 3 (Inhalation), H331 Carc. 1A, H350 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
barium nitrate substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, ES, FI, FR, GB, GI, HR, IE, IT, LT, LU, MT, NL, PL, PT, RO, SE, SI, SK, AL, IS, NO, MK, CH, TR); substance with a Community workplace exposure limit	CAS-No.: 10022-31-8 EC-No.: 233-020-5 EC Index-No.: 056-002-00-7	< 0,05	Ox. Sol. 2, H272 Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Inhalation), H332 Eye Irrit. 2, H319
uranyl acetate dihydrate substance with national workplace exposure limit(s) (BE, BG, DK, EE, ES, FI, IE, LV, PL, PT, IS, CH)	CAS-No.: 6159-44-0 EC-No.: 208-767-5 EC Index-No.: 092-002-00-3	< 0,05	Acute Tox. 2 (Oral), H300 Acute Tox. 2 (Inhalation), H330 STOT RE 2, H373 Aquatic Chronic 2, H411
silver nitrate 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, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK, AL, IS, NO, MK, RS, CH, TR); substance with a Community workplace exposure limit	CAS-No.: 7761-88-8 EC-No.: 231-853-9 EC Index-No.: 047-001-00-2	< 0,05	Ox. Sol. 2, H272 Met. Corr. 1, H290 Skin Corr. 1B, H314 Aquatic Acute 1, H400 (M=1000) Aquatic Chronic 1, H410 (M=100)
mercury nitrate substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, ES, FI, FR, GB, GI, GR, HR, HU, IE, LV, MT, NL, PL, PT, RO, SE, SI, SK, IS, NO, RS, CH); substance with a Community workplace exposure limit	CAS-No.: 10045-94-0 EC-No.: 233-152-3 EC Index-No.: 080-002-00-6	< 0,05	Acute Tox. 2 (Oral), H300 Acute Tox. 1 (Dermal), H310 Acute Tox. 2 (Inhalation), H330 STOT RE 2, H373 Aquatic Acute 1, H400 (M=100) Aquatic Chronic 1, H410
lead nitrate substance listed as REACH Candidate (Lead dinitrate) substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, LV, NL, PL, PT, RO, SE, SI, SK, IS, MK, CH); substance with a Community workplace exposure limit	CAS-No.: 10099-74-8 EC-No.: 233-245-9 EC Index-No.: 082-001-00-6	< 0,05	Ox. Sol. 2, H272 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Eye Dam. 1, H318 Skin Sens. 1B, H317 Carc. 2, H351 Repr. 1A, H360Df STOT RE 2, H373 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410
selenious acid substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, GB, HR, IE, PL, PT, RO, SE, SI, SK, IS, MK, CH)	CAS-No.: 7783-00-8 EC-No.: 231-974-7 EC Index-No.: 034-002-00-8	< 0,05	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Inhalation), H331 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
thallium nitrate substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DK, ES, FI, FR, GB, IE, PL, PT, RO, SK, IS, NO, CH)	CAS-No.: 10102-45-1 EC-No.: 233-273-1 EC Index-No.: 081-002-00-9	< 0,05	Ox. Sol. 2, H272 Acute Tox. 2 (Oral), H300 Acute Tox. 2 (Inhalation), H330 STOT RE 2, H373 Aquatic Chronic 2, H411

Specific concentration limits:

Name	Product identifier	Specific concentration limits (%)
nitric acid	CAS-No.: 7697-37-2 EC-No.: 231-714-2 EC Index-No.: 007-004-00-1 REACH-no: 01-2119487297-23-XXXX	(5 ≤ C < 20) Skin Corr. 1B, H314 (20 ≤ C < 100) Skin Corr. 1A, H314 (65 ≤ C < 99) Ox. Liq. 3, H272 (99 ≤ C < 100) Ox. Liq. 2, H272

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Specific concentration limits:		
Name	Product identifier	Specific concentration limits (%)
cobalt dinitrate	CAS-No.: 10141-05-6 EC-No.: 233-402-1 EC Index-No.: 027-009-00-2	(0,01 ≤ C ≤ 100) Carc. 1B, H350i
nickel dinitrate	CAS-No.: 13138-45-9 EC-No.: 236-068-5 EC Index-No.: 028-012-00-1	(0,01 ≤ C ≤ 100) Skin Sens. 1, H317 (0,1 < C < 1) STOT RE 2, H373 (1 ≤ C ≤ 100) STOT RE 1, H372 (20 ≤ C ≤ 100) Skin Irrit. 2, H315
cadmium nitrate	CAS-No.: 10325-94-7 EC-No.: 233-710-6 EC Index-No.: 048-001-00-5	(0,01 ≤ C < 100) Carc. 1B, H350 (0,1 ≤ C < 7) STOT RE 2, H373 (7 ≤ C < 100) STOT RE 1, H372
mercury nitrate	CAS-No.: 10045-94-0 EC-No.: 233-152-3 EC Index-No.: 080-002-00-6	(0,1 ≤ C ≤ 100) STOT RE 2, H373
lead nitrate	CAS-No.: 10099-74-8 EC-No.: 233-245-9 EC Index-No.: 082-001-00-6	(0,5 ≤ C ≤ 100) STOT RE 2, H373 (2,5 ≤ C ≤ 100) Repr. 2, H361f

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.

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

Symptoms/effects after skin contact	: Burns.
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.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Take up liquid spill into absorbent material.
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

Precautions for safe handling : Ensure good ventilation of the work station. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray. Wear personal protective equipment.
Hygiene measures : Wash contaminated clothing before reuse. 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

Storage conditions : Store in corrosive resistant container with a resistant inner liner. Keep only in original container. Store locked up. Store in a well-ventilated place. Keep cool.
Incompatible materials : Metals.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

nitric acid (7697-37-2)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Nitric acid
IOEL STEL	2,6 mg/m ³ 2,6 mg/m ³
IOEL STEL [ppm]	1 ppm 1 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC COMMISSION DIRECTIVE 2006/15/EC

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nitric acid (7697-37-2)	
Albania - Occupational Exposure Limits	
Local name	Acid nitrik
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	1 ppm
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	Salpetersäure
MAK (OEL STEL)	2,6 mg/m ³ (Mow)
MAK (OEL STEL) [ppm]	1 ppm (Mow)
OEL C	2,6 mg/m ³
OEL C [ppm]	1 ppm
Regulatory reference	BGBI. II Nr. 156/2021 BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Acide nitrique # Salpeterzuur
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	1 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Азотна киселина
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Dušična kiselina
KGVI (OEL STEL)	2,6 mg/m ³
KGVI (OEL STEL) [ppm]	1 ppm
Remark	Direktiva: 2006/15/EZ
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граничним vrijednostima izloženosti i biološkim граничним vrijednostima (NN 1/2021)
Cyprus - Occupational Exposure Limits	
Local name	Νιτρικό οξύ
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	1 ppm
Regulatory reference	Κανονισμοί του 2007 (Κ.Δ.Π. 295/2007)

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nitric acid (7697-37-2)	
Czech Republic - Occupational Exposure Limits	
Local name	Kyselina dusičná
PEL (OEL TWA)	1 mg/m ³
PEL (OEL TWA) [ppm]	0,4 ppm
NPK-P (OEL C)	2,5 mg/m ³
NPK-P (OEL C) [ppm]	1 ppm
Remark	I - dráždí sliznice (oči, dýchací cesty), respektive kůži.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Salpetersyre
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	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 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Lämmastikhape
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	1 ppm
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Typpihappo
HTP (OEL TWA) [1]	1,3 mg/m ³
HTP (OEL TWA) [2]	0,5 ppm
HTP (OEL STEL)	2,6 mg/m ³
HTP (OEL STEL) [ppm]	1 ppm
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
France - Occupational Exposure Limits	
Local name	Acide nitrique
VLE (OEL C/STEL)	2,6 mg/m ³
VLE (OEL C/STEL) [ppm]	1 ppm
Remark	Valeurs réglementaires indicatives
Regulatory reference	Arrêté du 30 juin 2004 modifié (réf.: INRS ED 984, 2016)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Salpetersäure
AGW (OEL TWA) [1]	2,6 mg/m ³
AGW (OEL TWA) [2]	1 ppm

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nitric acid (7697-37-2)	
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 ³
OEL STEL [ppm]	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 ³
OEL STEL [ppm]	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 ³
Remark	i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát), m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármát); 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
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	1 ppm
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2021
Italy - Occupational Exposure Limits	
Local name	Acido nitrico
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	1 ppm
Regulatory reference	Allegato XXXVIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i.
Latvia - Occupational Exposure Limits	
Local name	Slāpekšķābe
OEL TWA	2 mg/m ³
OEL TWA [ppm]	0,78 ppm
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	1 ppm

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nitric acid (7697-37-2)	
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325
Lithuania - Occupational Exposure Limits	
Local name	Nitrato rūgštis (azoto rūgštis)
TPRV (OEL STEL)	2,6 mg/m ³
TPRV (OEL STEL) [ppm]	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/m ³
OEL STEL [ppm]	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/m ³
OEL STEL [ppm]	1 ppm
Regulatory reference	S.L.424.24 - Chemical Agents at Work Regulations (L.N.356 of 2021)
Netherlands - Occupational Exposure Limits	
Local name	Salpeterzuur
TGG-15min (OEL STEL)	1,3 mg/m ³
TGG-15min (OEL STEL) [ppm]	0,5 ppm (Salpeterzuur; Netherlands; Short time value; Public occupational exposure limit value)
Regulatory reference	Arbeidsomstandighedenregeling 2022
Poland - Occupational Exposure Limits	
Local name	Kwas azotowy (V)
NDS (OEL TWA)	1,4 mg/m ³
NDSCh (OEL STEL)	2,6 mg/m ³
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Ácido nítrico
OEL TWA [ppm]	2 ppm
OEL STEL [ppm]	4 ppm
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Acid nitric/Acid azotic
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	1 ppm
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
Serbia - Occupational Exposure Limits	
Local name	азотна киселина

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nitric acid (7697-37-2)	
OEL STEL	3 mg/m ³
OEL STEL [ppm]	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/m ³
NPHV (OEL STEL) [ppm]	1 ppm
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	dušikova kislina
OEL TWA	2,6 mg/m ³
OEL TWA [ppm]	1 ppm
OEL STEL	2,6 mg/m ³
OEL STEL [ppm]	1 ppm
Remark	EU
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Spain - Occupational Exposure Limits	
Local name	Ácido nítrico
VLA-EC (OEL STEL)	2,6 mg/m ³
VLA-EC (OEL STEL) [ppm]	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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Salpetersyra
NGV (OEL TWA)	1,3 mg/m ³
NGV (OEL TWA) [ppm]	0,5 ppm
KTV (OEL STEL)	2,6 mg/m ³
KTV (OEL STEL) [ppm]	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/m ³
WEL STEL (OEL STEL) [ppm]	1 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Saltpéturssýra
OEL STEL	2,6 mg/m ³

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nitric acid (7697-37-2)	
OEL STEL [ppm]	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) [1]	5 mg/m ³
Grenseverdi (OEL TWA) [2]	2 ppm
Remark	E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet.
Regulatory reference	FOR-2021-06-28-2248
North Macedonia - Occupational Exposure Limits	
Local name	азотна киселина
OEL TWA	2,6 mg/m ³
OEL TWA [ppm]	1 ppm
KTV	1
Short time value [mg/m ³]	2,6 mg/m ³
Short time value [ppm]	1 ppm
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 ³ или во ml/m ³ (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/EC и за измените на директивата 91/322/EEC и директивата 2000/39/ EC (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) [1]	5 mg/m ³
MAK (OEL TWA) [2]	2 ppm
KZGW (OEL STEL)	5 mg/m ³
KZGW (OEL STEL) [ppm]	2 ppm
Critical toxicity	VRS, Yeux, Dent / OAW, Auge, Zahn
Remark	NIOSH, OSHA
Regulatory reference	www.suva.ch, 28.03.2022
USA - ACGIH - Occupational Exposure Limits	
Local name	Nitric acid
ACGIH OEL TWA [ppm]	2 ppm

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nitric acid (7697-37-2)	
ACGIH OEL STEL [ppm]	4 ppm
Remark (ACGIH)	TLV® Basis: URT & eye irr; dental erosion
Regulatory reference	ACGIH 2022
silver nitrate (7761-88-8)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Silver (soluble compounds as Ag)
IOEL TWA	0,01 mg/m ³ 0,01 mg/m ³
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC COMMISSION DIRECTIVE 2006/15/EC
Albania - Occupational Exposure Limits	
Local name	Argjend, metalik
OEL TWA	0,1 mg/m ³
Regulatory reference	VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES "PËR MBROJTJEN E SIGURISË DHE SHËNDËTIT TË PUNËMARRËSVE NGA RISQET E LIDHURA ME AGJENTËT KIMIKË NË PUNË"
Austria - Occupational Exposure Limits	
Local name	Silber
MAK (OEL TWA)	0,1 mg/m ³
MAK (OEL STEL)	0,1 mg/m ³
Regulatory reference	BGBI. II Nr. 156/2021 BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Argent (composés solubles) (en Ag) # Zilver (oplosbare verbindingen, als Ag)
OEL TWA	0,01 mg/m ³ (Argent (composés solubles) (en Ag); Belgium; Time-weighted average exposure limit 8 h)
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Сребро, метал•
OEL TWA	0,1 mg/m ³ 0,1 mg/m ³ метал 0,01 mg/m ³ разтворими съединения (като сребро)
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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Srebro, metal
GVI (OEL TWA) [1]	0,1 mg/m ³ 0,01 mg/m ³
Remark	EU* (naznaka da se radi o tvarima za koje su utvrđene indikativne granične vrijednosti izloženosti prema Direktivi 2000/39/ EC (prva lista))

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silver nitrate (7761-88-8)	
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021)
Cyprus - Occupational Exposure Limits	
Local name	Αργυρος (διαλυτές ενώσεις ως Ag)
OEL TWA	0,01 mg/m ³
Regulatory reference	Κανονισμοί του 2007 (Κ.Δ.Π. 295/2007)
Czech Republic - Occupational Exposure Limits	
Local name	St íbro
PEL (OEL TWA)	0,1 mg/m ³
NPK-P (OEL C)	0,3 mg/m ³
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Sølv, pulver, støv og opløselige forbindelser
OEL TWA [1]	0,01 mg/m ³ beregnet som Ag
Remark	E (betyder, at stoffet har en EF-grænseværdi)
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Hõbe, metall, vähelahustuvad ühendid
OEL TWA	0,1 mg/m ³ arvutatud hõbedale
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Hopea, metalli
HTP (OEL TWA) [1]	0,1 mg/m ³ Ag
HTP (OEL STEL)	0,03 mg/m ³ Ag
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
France - Occupational Exposure Limits	
Local name	Argent (métallique)
VME (OEL TWA)	0,1 mg/m ³
Remark	Valeurs réglementaires indicatives
Regulatory reference	Arrêté du 30 juin 2004 modifié (réf.: INRS ED 984, 2016)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Silber
AGW (OEL TWA) [1]	0,1 mg/m ³ E (mg/m ³)
Peak exposure limitation factor	8(II)
Remark	DFG,EU
Regulatory reference	TRGS900
Gibraltar - Occupational Exposure Limits	
Local name	Silver (soluble compounds as Ag)
OEL TWA	0,01 mg/m ³

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silver nitrate (7761-88-8)	
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)
Greece - Occupational Exposure Limits	
Local name	Άργυρος μεταλλικός
OEL TWA	0,1 mg/m ³
Regulatory reference	Π.Δ. 339/2001 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
Hungary - Occupational Exposure Limits	
Local name	EZÜST, fém
AK (OEL TWA)	0,1 mg/m ³
CK (OEL STEL)	0,4 mg/m ³
Remark	EU1 (2000/39/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
Ireland - Occupational Exposure Limits	
Local name	Silver (metallic)
OEL TWA [1]	0,1 mg/m ³
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2021
Italy - Occupational Exposure Limits	
Local name	Argento, metallico
OEL TWA	0,1 mg/m ³
Regulatory reference	Allegato XXXVIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i.
Latvia - Occupational Exposure Limits	
Local name	Sudrabs,metālistkais
OEL TWA	0,1 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
Luxembourg - Occupational Exposure Limits	
Local name	Argent métallique
OEL TWA	0,1 mg/m ³
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	Silver,metallic
OEL TWA	0,1 mg/m ³
Regulatory reference	S.L.424.24 - Chemical Agents at Work Regulations (L.N.356 of 2021)
Netherlands - Occupational Exposure Limits	
Local name	Zilver, oplosbare verbindingen
TGG-8u (OEL TWA)	0,01 mg/m ³ (als Ag)
Regulatory reference	Arbeidsomstandighedenregeling 2022

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silver nitrate (7761-88-8)	
Poland - Occupational Exposure Limits	
Local name	Srebro dymy i pyły
NDS (OEL TWA)	0,05 mg/m ³
Remark	Frakcja wdychalna – frakcja aerozolu wnikająca przez nos i usta, która po zdeponowaniu w drogach oddechowych stwarza zagrożenie dla zdrowia.
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Prata
OEL TWA	0,1 mg/m ³ Metal, poeiras e fumos 0,01 mg/m ³ Compostos solúveis, expressos em Ag
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Argent
OEL TWA	0,1 mg/m ³ (Metalic)
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
Serbia - Occupational Exposure Limits	
Local name	сребро, метал
OEL TWA	0 mg/m ³
Remark	ЕУ* – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2000/39/ЕЗ (прва 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	Striebro (ako Ag)
NPHV (OEL TWA) [1]	0,1 mg/m ³ kovové 0,01 mg/m ³ rozpustné zlúčeniny
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	srebro [7440-22-4] (topne spojine, računano kot Ag)
OEL TWA	0,01 mg/m ³
OEL STEL	0,02 mg/m ³
Remark	EU
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Spain - Occupational Exposure Limits	
Local name	Plata
VLA-ED (OEL TWA) [1]	0,1 mg/m ³ metal 0,01 mg/m ³ Compuestos solubles de plata, como Ag
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).

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silver nitrate (7761-88-8)	
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Silver, metall och svårösliga föreningar (som Ag)
NGV (OEL TWA)	0,1 mg/m ³ 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)
Sweden - Biological limit values	
Local name	Kvicksilver
BLV	50 nmol/l Kvicksilverhalten i blod
Regulatory reference	Medicinska kontroller i arbetslivet (AFS 2019:3)
United Kingdom - Occupational Exposure Limits	
Local name	Silver
WEL TWA (OEL TWA) [1]	0,01 mg/m ³ soluble compounds as Ag 0,1 mg/m ³ metallic
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Silfur, duft, ryk og leysanleg sambönd, sem Ag
OEL TWA	0,01 mg/m ³
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Norway - Occupational Exposure Limits	
Local name	Sølv, metallstøv og røyk
Grenseverdi (OEL TWA) [1]	0,1 mg/m ³
Remark	E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet.
Regulatory reference	FOR-2021-06-28-2248
North Macedonia - Occupational Exposure Limits	
Local name	Сребро (растворливи соединенија, сметано како Ag)
OEL TWA	0,01 mg/m ³
Remark	(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	Silber
MAK (OEL TWA) [1]	0,1 mg/m ³ 0,01 mg/m ³
KZGW (OEL STEL)	0,8 mg/m ³ 0,02 mg/m ³

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silver nitrate (7761-88-8)	
Critical toxicity	Peau / Haut
Remark	e(mg/m ³) - Haut ^{KT HU} - NIOSH, OSHA
Regulatory reference	www.suva.ch, 28.03.2022
USA - ACGIH - Occupational Exposure Limits	
Local name	Silver
ACGIH OEL TWA	0,01 mg/m ³ (Silver Soluble compounds, as Ag; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
Remark (ACGIH)	TLV [®] Basis: Argyria
Regulatory reference	ACGIH 2022
aluminium nitrate (13473-90-0)	
Austria - Occupational Exposure Limits	
Local name	Aluminium (als Metall)
MAK (OEL TWA)	10 mg/m ³ (E) 10 mg/m ³ (E)
MAK (OEL STEL)	20 mg/m ³ (E, 2x 60(Miw) min) 20 mg/m ³ (E, 2x 60(Miw) min)
Regulatory reference	BGBI. II Nr. 156/2021 BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Aluminium (sels solubles) (en Al) # Aluminiumzouten (oplosbaar) (als Al)
OEL TWA	2 mg/m ³
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Алуминий
OEL TWA	10 mg/m ³ (метален прах и оксиди). (инхалабилна фракция) 1,5 mg/m ³ (метален прах и оксиди). (респирабилна фракция) 2 mg/m ³ (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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Aluminij
GVI (OEL TWA) [1]	10 mg/m ³ U (ukupna prašina) 4 mg/m ³ R (respirabilna prašina)
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граниčnim vrijednostima izloženosti i biološkim граниčnim vrijednostima (NN 1/2021)
Denmark - Occupational Exposure Limits	
Local name	Aluminium, opløselige salte
OEL TWA [1]	1 mg/m ³ beregnet som Al
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Alumiinium, metalliline ja oksiidid

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aluminium nitrate (13473-90-0)	
OEL TWA	10 mg/m ³ kogu tolm 4 mg/m ³ peentolm
Remark	1 (Peentolm koosneb alla 2,5-mikromeetrise läbimõõduga osakestest, mis võivad jõuda koos sissehingatava õhuga kopsu alveoolidesse (respireeritav fraktsioon))
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
France - Occupational Exposure Limits	
Local name	Aluminium
VME (OEL TWA)	10 mg/m ³ (métal) 5 mg/m ³ (pulvérulent)
Remark	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
Germany - Biological limit values (TRGS 903)	
Local name	Aluminium
Biological limit value	50 µg/g creatinine Parameter: Aluminium - Untersuchungsmaterial: U = Urin - Probenahmezeitpunkt: c) bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten - Festlegung/Begründung: 11/2018 DFG
Regulatory reference	TRGS 903
Greece - Occupational Exposure Limits	
Local name	Αργίλιο μεταλλικό & οξειδίο του αργιλίου
OEL TWA	10 mg/m ³ αναπν. 5 mg/m ³ 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 ³ 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 [1]	2 mg/m ³
Regulatory reference	Chemical Agents Code of Practice 2021
Latvia - Occupational Exposure Limits	
Local name	Alumīnijs un tā sakausējumi (pēc alumīnija)
OEL TWA	2 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
Sweden - Occupational Exposure Limits	
Local name	Aluminium, lösliga föreningar (som Al)
NGV (OEL TWA)	1 mg/m ³ totaldamm

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aluminium nitrate (13473-90-0)	
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, Arbetskyddsstyrelsen, 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)
United Kingdom - Occupational Exposure Limits	
Local name	Aluminium
WEL TWA (OEL TWA) [1]	2 mg/m ³ alkyl compounds 2 mg/m ³ salts, soluble 10 mg/m ³ metal, inhalable dust 4 mg/m ³ metal, respirable dust
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Norway - Occupational Exposure Limits	
Local name	Aluminiumlöselige salter (beregnet som Al)
Grenseverdi (OEL TWA) [1]	2 mg/m ³
Regulatory reference	FOR-2021-06-28-2248
Switzerland - Occupational Exposure Limits	
Local name	Aluminium, sels solubles et dérivés alkylés / Aluminium, lösliche Salze und Alkylverbindungen
MAK (OEL TWA) [1]	2 mg/m ³ (i) / (e)
Regulatory reference	www.suva.ch, 28.03.2022
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
arsenic acid (7778-39-4)	
EU - Binding Occupational Exposure Limit (BOEL)	
Local name	Arsenic acid and its salts, as well as inorganic arsenic compounds
BOEL TWA	0,01 mg/m ³ (Inhalable fraction)
Notes	For the copper smelting sector, the limit value shall apply from 11 July 2023
Regulatory reference	DIRECTIVE (EU) 2019/983 (amending Directive 2004/37/EC)
Austria - Occupational Exposure Limits	
Local name	Arsensäure und deren Salze: Arsensäure
TRK (OEL TWA)	0,01 mg/m ³ (als As berechnet, E) 0,1 mg/m ³ (als As berechnet, E) (Gilt in der Kupferverhüttung bis 10.07.2023)
TRK (OEL STEL)	0,04 mg/m ³ (als As berechnet, E, 4x 15(Miw) min) 0,4 mg/m ³ (als As berechnet, E, 4x 15(Miw) min) (Gilt in der Kupferverhüttung bis 10.07.2023)

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arsenic acid (7778-39-4)	
Remark	Krebserzeugend: III A1
Regulatory reference	BGBl. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
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/m ³ (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 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 11/05/2021
Croatia - Occupational Exposure Limits	
Local name	Arsen i drugi arsenovi spojevi (izuzev arsina)
GVI (OEL TWA) [1]	0,1 mg/m ³
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021)
Croatia - Biological limit values	
Local name	Arsen (elementaran i anorgansk spojevi)
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 živežnim namirnicama iz mora značajno povisuje nalaz 70 µg/l Karakteristični pokazatelj: arsen - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju smjene ili mokraća skupljena tijekom 24 sata - Napomena: hrana bogata živežnim 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 - Occupational Exposure Limits	
Local name	Arsen
PEL (OEL TWA)	0,1 mg/m ³
NPK-P (OEL C)	0,4 mg/m ³
Remark	B - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Czech Republic - Biological limit values	
Local name	Arsen
BLV	0,05 mg/g creatinine Ukazatel: Arsen - Biologicky vzorek: moči - Doba odběru: konec pracovního týdne 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 [1]	0,0028 mg/m ³ beregnet som As

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arsenic acid (7778-39-4)	
Remark	E (betyder, at stoffet har en EU-grænseværdi); K (betyder, at stoffet anses for at kunne være kræftfremkaldende)
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Arseen ja anorgaanilised ühendid, v.a arseenhüdroiid (arvutatud arseenile)
OEL TWA	0,03 mg/m ³
Remark	C (Kantserogeenne aine), 3 (Vääveldioksiid tugevdab arseeni kantserogeenseid omadusi), 4 (Uute tootmisüksuste loomisel ja vanade rekonstrueerimisel on soovitatav arvestada arseeni ja tema anorgaaniliste ühendite piirnormiks tööpäeva jooksul 0,01 mg/m ³ (arvutatud arseenile))
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Arseeni
HTP (OEL TWA) [1]	0,01 mg/m ³ As (Kuparinsulatusalaa osalta mainittua raja-arvoa sovelletaan 11 päivästä heinäkuuta 2023)
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
Finland - Biological limit values	
Local name	Arseeni
BLV	70 nmol/l Parametri: Virtsan epäorgaaninen arseen - 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	Arsenverbindungen, als Carc. 1A, Carc. 1B eingestuft
Acceptable concentration (Weight conc.)	0,83 µg/m ³ (E)
Notes	b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000
Tolerance concentration (Weight conc.)	8,3 µg/m ³ (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), Monomethylarsensäure und Dimethylarsensäure
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/m ³
Remark	k(1A) (rákkeltő), b (Bőrön át is felszívódik), i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát), BEM (biológiai expozíciós mutató); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik)

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arsenic acid (7778-39-4)	
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) 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 [1]	0,01 mg/m ³ I (Inhalable Fraction)
Remark	BOELV, Carc.1A (Substances known to have carcinogenic potential for humans), For copper smelting sector, the limit value shall apply from 11 July 2023
Regulatory reference	Chemical Agents Code of Practice 2021
Ireland - Biological limit values	
Local name	Arsenic, elemental and soluble inorganic compounds
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/m ³ Frazione inalabile
Remark	Per il settore della fusione del rame il valore limite si applica dall'11 luglio 2023
Regulatory reference	Allegato XLIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i.
Lithuania - Occupational Exposure Limits	
Local name	Arseno rūgštis ir jos druskos, taip pat neorganiniai arseno junginiai
IPRV (OEL TWA)	0,01 mg/m ³ (įkvėpiamoji frakcija) 0,03 mg/m ³ (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)	0,0028 mg/m ³
Remark	Kankerverwekkende stof
Regulatory reference	Arbeidsomstandighedenregeling 2022
Poland - Occupational Exposure Limits	
Local name	Arsen i jego związki nieorganiczne
NDS (OEL TWA)	0,01 mg/m ³ w przeliczeniu na As – frakcja wdychalna

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arsenic acid (7778-39-4)	
Remark	Frakcja wdychalna – frakcja aerozolu wnikająca przez nos i usta, która po zdeponowaniu w drogach oddechowych stwarza zagrożenie dla zdrowia.
Regulatory reference	Dz. U. 2020 poz. 61
Portugal - Occupational Exposure Limits	
Local name	Arsénio e compostos inorgânicos, expressos em As
OEL TWA	0,01 mg/m ³
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
Romania - Occupational Exposure Limits	
Local name	Acid arsenic si sărurile acestuia, precum si compușii anorganici ai arsenului
OEL TWA	0,01 mg/m ³ Frație inhalabilă
Remark	C1A - poate provoca apariția cancerului. Pentru sectorul topirii cuprului, valoarea-limită se aplică de la 11 iulie 2023.
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
Romania - Biological limit values	
Local name	Arsen și AsH3
BLV	50 µg/g creatinine Indicator biologic: Arsen - Material biologic: urină - Momentul recoltării: sfârșit de săptămână 0,005 mg/g Indicator biologic: Arsen - Material biologic: păr - Momentul recoltării: sfârșit de săptămână
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 584/2018)
Slovakia - Occupational Exposure Limits	
Local name	Kyselina arzeničná a jej soli (ako As)
NPHV (OEL TWA) [1]	0,01 mg/m ³ inhalovateľná frakcia (TSH pre arzén a jeho anorganické zlúčeniny a pre kyselinu arzeničnú a jej soli sa pri tavení medi uplatňuje od 11. júla 2023)
Remark	Kategória karcinogénov 1A – Dokázaný karcinogén pre ľudí
Regulatory reference	Nariadenie vlády č. 356/2006 Z. z. (235/2020 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	arzenova kislina (As2O5) in njene soli ter anorganske arzenove spojine
OEL TWA	0,1 mg/m ³ 0,01 mg/m ³
OEL STEL	0,4 mg/m ³
Remark	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. 79/2019 z dne 24.12.2019
Spain - Occupational Exposure Limits	
Local name	Arsénico elemental

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arsenic acid (7778-39-4)	
VLA-ED (OEL TWA) [1]	0,01 mg/m ³
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 consúltese: Base de datos de productos biocidas: http://www.msssi.gob.es/ciudadanos/productos.do?tipo=plaguicidas Base de datos de productos fitosanitarios http://www.magrama.gob.es/agricultura/pags/fitos/registro/fichas/pdf/Lista_sa.pdf).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. 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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Arsenik, och oorg. föreningar (som As) utom Arseniktrihydrid
NGV (OEL TWA)	0,01 mg/m ³ inhalerbar fraktion
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); 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. 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	Arsenic
WEL TWA (OEL TWA) [1]	0,1 mg/m ³ 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 ólfræn sambönd, sem As
OEL TWA	0,01 mg/m ³ sjá einnig arsín og kalsíumarsenat
Remark	K (efnið er krabbameinsvaldandi). Vissar upplýsingar benda til að brennisteinsdfoxíð geti aukið krabbameinsvirkni arseníks
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)

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arsenic acid (7778-39-4)	
Norway - Occupational Exposure Limits	
Local name	Arsen, arsensyre og dets salter, og uorganiske arsenforbindelser (unntatt arsenhydrid) (beregnet som As), inhalerbar
Grenseverdi (OEL TWA) [1]	0,005 mg/m ³
Remark	K: Kjemikalier som skal betraktes som kreftfremkallende; H: Kjemikalier som kan tas opp gjennom huden; G: EU har fastsatt en bindende grenseverdi og/eller anmerking for stoffet.
Regulatory reference	FOR-2021-06-28-2248
North Macedonia - Occupational Exposure Limits	
Local name	Арсенова киселина (As ₂ O ₅) и нејзините соли
OEL TWA	0,1 mg/m ³ (l) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува
KTV	4
Short time value [mg/m ³]	0,4 mg/m ³
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 ³ или во ml/m ³ (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) [1]	0,01 mg/m ³ (i) / (e)
Critical toxicity	Formel / Formal
Notation	R, C _{1A} , M ₂ , B, P / H, C _{1A} , M ₂ , B, P
Remark	HSE, NIOSH, BG
Regulatory reference	www.suva.ch, 28.03.2022
Switzerland - BAT	
Local name	Arsenic et ses composés inorg. / Arsen und anorganische Arsenverbindungen
BAT	50 µg/l (667 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.) / (667 nmol/l; Biologischer Parameter: Anorganisches Arsen und methylierte Metaboliten; Untersuchungsmaterial: Urin; Probennahmezeitpunkt: Expositionsende, bzw. Schichtende. Bei Langzeitexposition: nach mehreren vorangegangenen Schichten.)
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

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arsenic acid (7778-39-4)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Arsenic and inorganic compounds, as As
ACGIH OEL TWA	0,01 mg/m ³ (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 2022
barium nitrate (10022-31-8)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Barium (soluble compounds as Ba)
IOEL TWA	0,5 mg/m ³ 0,5 mg/m ³
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC COMMISSION DIRECTIVE 2006/15/EC
Albania - Occupational Exposure Limits	
Local name	Barium
OEL TWA	0,5 mg/m ³ (përbërje të tretshme, si Ba)
Regulatory reference	VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES "PËR MBROJTJEN E SIGURISË DHE SHËNDËTIT TË PUNËMARRËSVE NGA RISQET E LIDHURA ME AGJENTËT KIMIKË NË PUNË"
Austria - Occupational Exposure Limits	
Local name	Bariumverbindungen, lösliche (ausgenommen Bariumchromat)
MAK (OEL TWA)	0,5 mg/m ³ (als Ba berechnet, E) 0,5 mg/m ³ (als Ba berechnet, E)
MAK (OEL STEL)	2 mg/m ³ (als Ba berechnet, E, 4x 15(Miw) min) 2 mg/m ³ (als Ba berechnet, E, 4x 15(Miw) min)
Regulatory reference	BGBI. II Nr. 156/2021 BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Baryum (composés solubles) (en Ba) # Barium (oplosbare verbindingen) (als Ba)
OEL TWA	0,5 mg/m ³
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Барий
OEL TWA	0,5 mg/m ³ разтворими съединения (като барий)
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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Barij (topljivi spojevi kao Ba)
GVI (OEL TWA) [1]	0,5 mg/m ³
Remark	Direktiva: 2006/15/EZ

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barium nitrate (10022-31-8)	
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021)
Czech Republic - Occupational Exposure Limits	
Local name	Barya sloučeniny rozpustné, jako Ba
PEL (OEL TWA)	0,5 mg/m ³
NPK-P (OEL C)	2,5 mg/m ³
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Bariumforbindelser, opløselige
OEL TWA [1]	0,5 mg/m ³ beregnet som Ba
Remark	E (betyder, at stoffet har en EF-grænseværdi)
Regulatory reference	BEK nr 2203 af 29. november 2021
Finland - Occupational Exposure Limits	
Local name	Barium, liukoiset yhdisteet
HTP (OEL TWA) [1]	0,5 mg/m ³ Ba
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
France - Occupational Exposure Limits	
VME (OEL TWA)	0,5 mg/m ³ (Baryum (composés solubles), en Ba; France; Time-weighted average exposure limit 8 h; VRI: Valeur réglementaire indicative)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Bariumverbindungen, löslich (außer Bariumoxid und Bariumhydroxid)
AGW (OEL TWA) [1]	0,5 mg/m ³ (E)
Peak exposure limitation factor	1(I)
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; 10 - Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls; 15 - Für die analytische Bestimmung wird folgende Vorgehensweise empfohlen: "Analytische Methoden zur Prüfung gesundheitsschädlicher Arbeitsstoffe", Band 1 "Luftanalysen", 14. Lieferung 2005, und "Spezielle Vorbemerkungen", Kap. 4.7.1, S. 29-30, Wiley-VCH Verlag GmbH & Co.KGaA, Weinheim oder "Messung von Gefahrstoffen", BGI-Arbeitsmappe, Erich Schmidt Verlag, Bielefeld
Regulatory reference	TRGS900
Gibraltar - Occupational Exposure Limits	
Local name	Barium (soluble compounds as Ba)
OEL TWA	0,5 mg/m ³
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)
Ireland - Occupational Exposure Limits	
Local name	Barium compounds, (soluble compounds as Ba)
OEL TWA [1]	0,5 mg/m ³
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2021

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barium nitrate (10022-31-8)	
Italy - Occupational Exposure Limits	
Local name	Bario (composti solubili come Ba)
OEL TWA	0,5 mg/m ³
Regulatory reference	Allegato XXXVIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i.
Lithuania - Occupational Exposure Limits	
Local name	Baris (tirpieji junginiai, kaip Ba)
IPRV (OEL TWA)	0,5 mg/m ³
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Luxembourg - Occupational Exposure Limits	
Local name	Baryum (composés solubles en Ba)
OEL TWA	0,5 mg/m ³
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	Barium (soluble compounds as Ba) # Barium (kompost li jinħallu bħala Ba)
OEL TWA	0,5 mg/m ³
Regulatory reference	S.L.424.24 - Chemical Agents at Work Regulations (L.N.356 of 2021)
Netherlands - Occupational Exposure Limits	
Local name	Barium
TGG-8u (OEL TWA)	0,5 mg/m ³ oplosbare verbindingen (als Ba)
Regulatory reference	Arbeidsomstandighedenregeling 2022
Poland - Occupational Exposure Limits	
Local name	Bar i jego związki nieorganiczne w przeliczeniu na Ba
NDS (OEL TWA)	0,5 mg/m ³
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Báριο e compostos solúveis, expressos em Ba
OEL TWA	0,5 mg/m ³
Remark	A4 (Agente não classificável como carcinogénico no Homem)
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Bariu (compuși solubili exprimați ca Ba)
OEL TWA	0,5 mg/m ³
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
Slovakia - Occupational Exposure Limits	
Local name	Bárium zlúčeniny rozpustné ako Ba
NPHV (OEL TWA) [1]	0,5 mg/m ³
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)

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barium nitrate (10022-31-8)	
Slovenia - Occupational Exposure Limits	
Local name	barij (topne spojine, računano kot Ba)
OEL TWA	0,5 mg/m ³
OEL STEL	0,5 mg/m ³
Remark	EU
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Spain - Occupational Exposure Limits	
Local name	Bario
VLA-ED (OEL TWA) [1]	0,5 mg/m ³ elemental 0,5 mg/m ³ Compuestos de bario solubles, como Ba
Remark	c (Los términos "soluble" e "insoluble" se entienden con referencia al agua), 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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Barium, lösliga föreningar (som Ba)
NGV (OEL TWA)	0,5 mg/m ³ 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, Arbetskyddsstyrelsen, 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)
United Kingdom - Occupational Exposure Limits	
Local name	Barium
WEL TWA (OEL TWA) [1]	0,5 mg/m ³ compounds, soluble (as Ba)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Baríumsambönd, uppleysanleg (sem Ba)
OEL TWA	0,5 mg/m ³
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Norway - Occupational Exposure Limits	
Local name	Barium og bariumforb. (unntatt bariumsulfat) (beregnet som Ba)
Grenseverdi (OEL TWA) [1]	0,5 mg/m ³
Remark	E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet.
Regulatory reference	FOR-2021-06-28-2248
North Macedonia - Occupational Exposure Limits	
Local name	Барииум (растворливи соединенија, пресметани како Ba)

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barium nitrate (10022-31-8)	
OEL TWA	0,5 mg/m ³
Remark	(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	Baryum, composés solubles / Bariumverbindungen, löslich
MAK (OEL TWA) [1]	0,5 mg/m ³ (i) / (e)
KZGW (OEL STEL)	4 mg/m ³ (i) / (e)
Remark	NIOSH
Regulatory reference	www.suva.ch, 28.03.2022
USA - ACGIH - Occupational Exposure Limits	
Local name	Barium and soluble compounds
ACGIH OEL TWA	0,5 mg/m ³
Remark (ACGIH)	TLV® Basis: Eye, skin, & GI irr; muscular stimulation. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2022
beryllium nitrate (13597-99-4)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Beryllium nitrate
IOEL TWA	0,0002 mg/m ³ (BOEL. Inhalable fraction) 0,0006 mg/m ³ (Limit value until 11 July 2026)
IOEL TWA [ppm]	0,02 µg/m ³ (inhalable fraction)
IOEL STEL [ppm]	0,2 µg/m ³ (inhalable fraction)
Remark	Sensitisation (dermal and respiratory). (Year of adoption 2017)
Regulatory reference	SCOEL Recommendations
EU - Binding Occupational Exposure Limit (BOEL)	
Local name	Beryllium
BOEL TWA	0,0002 mg/m ³ (Inhalable fraction) 0,0006 mg/m ³ (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)
EU - Biological Limit Value (BLV)	
Local name	Beryllium
Regulatory reference	SCOEL List of recommended health-based BLVs and BGVs
Austria - Occupational Exposure Limits	
Local name	Beryllium und seine Verbindungen
MAK (OEL TWA)	0,00002 mg/m ³ (als Be berechnet, E)
MAK (OEL STEL)	0,0002 mg/m ³ (als Be berechnet, E, 4x 15(Miw) min)
TRK (OEL TWA)	0,0006 mg/m ³ (als Be berechnet, E)

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beryllium nitrate (13597-99-4)	
TRK (OEL STEL)	0,0024 mg/m ³ (als Be berechnet, E, 4x 15(Miw) min)
Remark	Sah. Krebserzeugend: III A2
Regulatory reference	BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Béryllium et ses composés (en Be) # Beryllium en -verbindingen (als Be)
OEL TWA	0,002 mg/m ³
OEL STEL	0,01 mg/m ³
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 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Берилий
OEL TWA	0,002 mg/m ³ и съединения (като берилий)
Remark	Кожна и дихателна сензибилизация (Веществото може да предизвика сензибилизация 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.5 от 17 Януари 2020 г.)
Croatia - Occupational Exposure Limits	
Local name	Berilij
GVI (OEL TWA) [1]	0,002 mg/m ³
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, граниčnim vrijednostima izloženosti i biološkim граниčnim vrijednostima (NN 1/2021)
Czech Republic - Occupational Exposure Limits	
Local name	Beryllium
PEL (OEL TWA)	0,001 mg/m ³
NPK-P (OEL C)	0,002 mg/m ³
Remark	I - dráždí sliznice (oči, dýchací cesty), respektive kůže, K, S - látka má senzibilizující účinek (s větou H317, H334), P - u látky nelze vyloučit závažné pozdní účinky (s větou H372, H373), V - vdechovatelná frakce aerosolu.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Beryllium, pulver og forbindelser
OEL TWA [1]	0,001 mg/m ³ 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 1054 af 28/06/2022

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beryllium nitrate (13597-99-4)	
Estonia - Occupational Exposure Limits	
Local name	Berüllium ja berülliumi anorgaanilised ühendid
OEL TWA	0,0002 mg/m ³ (Kehtiv alates 11.07.2026) 0,0006 mg/m ³ (Kehtiv kuni 10.07.2026)
Remark	C (Kantserogeenne aine), S (Sensibiliseeriv aine), 6 (Metalliline berüllium ei ole sensibiliseeriv), 31 (Sissehingatav fraktsioon)
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Beryllium, metalli
HTP (OEL TWA) [1]	0,0001 mg/m ³
HTP (OEL STEL)	0,0004 mg/m ³
Remark	lho
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
France - Occupational Exposure Limits	
Local name	Béryllium et composés, en Be
VME (OEL TWA)	0,002 mg/m ³
Remark	Valeurs recommandées/admises; substance classée cancérigène de catégorie 1b
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016; Décret n° 2021-1849)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Beryllium und seine anorganischen Verbindungen
AGW (OEL TWA) [1]	0,00006 mg/m ³ (A) 0,00014 mg/m ³ (E)
Peak exposure limitation factor	1(l)
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 ³
Remark	k(1B) (rákkeltő); 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
Ireland - Occupational Exposure Limits	
Local name	Beryllium and beryllium compounds (as Be)
OEL TWA [1]	0,0002 mg/m ³

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beryllium nitrate (13597-99-4)	
Remark	BOELV (Binding Occupational Exposure Limit Values), Sens. (In the workplace respiratory or dermal exposures to sensitising agents may occur. Sensitizers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The notation does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitizers 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))
Regulatory reference	Chemical Agents Code of Practice 2021
Latvia - Occupational Exposure Limits	
Local name	Berilijs un neorganiskie berilija savienojumi
OEL TWA	0,0002 mg/m ³ leelpojamā frakcija
Remark	Viela var izraisīt ādas un elpceļu sensibilizāciju. Carc. 1B
Regulatory reference	Ministru kabineta 2008. gada 29. septembra noteikumi Nr. 803 (Grozījumi Ministru kabineta 2021. gada 18. februārī noteikumiem Nr. 109)
Poland - Occupational Exposure Limits	
Local name	Beryl i jego związki nieorganiczne w przeliczeniu na Be
NDS (OEL TWA)	0,0002 mg/m ³
Remark	Substancja może mieć działanie uczulające na skórę i układ oddechowy. Frakcja wdychalna – frakcja aerozolu wnikająca przez nos i usta, która po zdeponowaniu w drogach oddechowych stwarza zagrożenie dla zdrowia.
Regulatory reference	Dz. U. 2020 poz. 61
Portugal - Occupational Exposure Limits	
Local name	Berílio e compostos, expressos em Be
OEL TWA	0,00005 mg/m ³ 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/m ³
Slovakia - Occupational Exposure Limits	
Local name	Berýlium a anorganické zlúčeniny berýlia (ako Be)
NPHV (OEL TWA) [1]	0,0002 mg/m ³ inhalovateľná frakcia (TSH pre berýlium a jeho anorganické zlúčeniny má prechodné obdobie do 11. júla 2026)
Remark	Kategória karcinogénov 1B – Pravdepodobný karcinogén; S – senzibilizujúce účinky majú látky, ktoré spôsobujú oveľa vyšší výskyt precitlivosti alergického typu, ako je bežný. Pri práci s nimi je potrebná osobitná opatrnosť. Dodržiavanie technických smerných hodnôt nezaručuje, že nevzniknú u vnímavých osôb alergické reakcie. (Látka môže spôsobiť senzibilizáciu kože a dýchacích ciest).
Regulatory reference	Nariadenie vlády č. 356/2006 Z. z. (235/2020 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	berilij in anorganske berilijeve spojine

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beryllium nitrate (13597-99-4)	
OEL TWA	0,0002 mg/m ³ 0,0006 mg/m ³
Remark	EU, SK (Snov lahko povzroči preobčutljivost kože), SD (Snov lahko povzroči preobčutljivost dihalnih poti)
Regulatory reference	Uradni list RS, št. 79/2019 z dne 24.12.2019
Spain - Occupational Exposure Limits	
Local name	Berilio
VLA-ED (OEL TWA) [1]	0,0002 mg/m ³ elemental 0,0002 mg/m ³ 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) n° 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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Beryllium, och föreningar (som Be)
NGV (OEL TWA)	0,002 mg/m ³ 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. 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 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. 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) [1]	0,002 mg/m ³ 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/m ³ örfínt ryk (gildir til 11. júlí 2026) 0,0002 mg/m ³ örfínt ryk

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beryllium nitrate (13597-99-4)	
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/m ³ мелење; (I) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува 0,002 mg/m ³ друго; (I) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува
KTV	4
Short time value [mg/m ³]	0,02 mg/m ³
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 ³ или во ml/m ³ (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (ТДК) 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	Beryllium und seine Verbindungen (als Be berechnet)
MAK (OEL TWA) [1]	0,002 mg/m ³
Critical toxicity	Beryll / Beryll
Notation	S, C1 [#] _A / S, C1 [#] _A
Remark	e(mg/m ³) - S C1 _A - Beryll ^{KT} - BG, HSE, NIOSH
Regulatory reference	www.suva.ch, 01.01.2023
USA - ACGIH - Occupational Exposure Limits	
Local name	Beryllium and compounds, as Be
ACGIH OEL TWA	0,00005 mg/m ³
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 2023
cadmium nitrate (10325-94-7)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Cadmium and its inorganic compounds
IOEL TWA	0,001 mg/m ³ (BOEL. Inhalable fraction) 0,004 mg/m ³ (Inhalable fraction. Limit value until 11 July 2027)

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cadmium nitrate (10325-94-7)	
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)
EU - Binding Occupational Exposure Limit (BOEL)	
Local name	Cadmium and its inorganic compounds
BOEL TWA	0,001 mg/m ³ (Inhalable fraction) 0,004 mg/m ³ (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)
EU - Biological Limit Value (BLV)	
Local name	Cadmium
BLV	2 µg/g creatinine Parameter: Cd - Medium: urine
Regulatory reference	SCOEL List of recommended health-based BLVs and BGVs
Austria - Occupational Exposure Limits	
Local name	Cadmium und seine Verbindungen: Cadmium
TRK (OEL TWA)	0,004 mg/m ³ (als Cd berechnet, E) (Gilt bis 11.07.2027) 0,001 mg/m ³ (als Cd berechnet, E, 4x 15(Miw) min)
TRK (OEL STEL)	0,016 mg/m ³ (als Cd berechnet, E) (Gilt bis 11.07.2027) 0,004 mg/m ³ (als Cd berechnet, E, 4x 15(Miw) min)
Remark	Fortpflanzungsgefährdend: f, d. Krebs erzeugend: III A2
Regulatory reference	BGBl. II Nr. 156/2021
Austria - Biological limit values	
Local name	Cadmium und seine Verbindungen
BLV	2,5 µg/g creatinine Parameter: Cadmium - Untersuchungsmaterial: Harn
Remark	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. 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.
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 verbindingsen, als Cd

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cadmium nitrate (10325-94-7)	
OEL TWA	0,002 mg/m ³ (particules alvéolaires) # (inadembare deeltjes) 0,004 mg/m ³ (particules inhalables, jusqu'au 11 juillet 2027) # (inhaleerbare deeltjes, tot en met 11 juli 2027) 0,001 mg/m ³ (particules inhalables, à partir du 12 juillet 2027) # (inhaleerbare deeltjes, vanaf 12 juli 2027)
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 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Кадмий и неговите неорганични съединения
OEL TWA	0,004 mg/m ³ (До 10 юли 2027 г.) 0,001 mg/m ³ (Инхалабилна фракция. В сила от 11.07.2027 г.)
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.5 от 17 Януари 2020 г.)
Croatia - Occupational Exposure Limits	
Local name	Kadmijevi (nepiroforni) spojevi (kao Cd)
GVI (OEL TWA) [1]	0,025 mg/m ³
Remark	T+ (vrlo otrovno); N (opasno za okoliš); Karc. kat. 2 (tvori koje su vjerojatno karcinogene za ljude); Muta. kat. 3 (tvori koje izazivaju zabrinutost zbog mogućeg mutagenog djelovanja na ljude); Repr. kat. 3 (tvori za koje se pretpostavlja da bi mogle smanjiti plodnost kod ljudi i/ili – tvori 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 1/2021)
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 5 µg/l Karakteristični pokazatelj: kadmij - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično - Napomena: pušenje značajno povisuje nalaz 5,03 µmol/mol creatinine Karakteristični pokazatelj: kadmij - Biološki uzorak: mokraća - Vrijeme uzorkovanja: jednokratni uzorak ili mokraća skupljen tijekom 24 sata 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 - Occupational Exposure Limits	
Local name	jakoKadmiumCd a jeho slou eniny,
PEL (OEL TWA)	0,05 mg/m ³
NPK-P (OEL C)	0,1 mg/m ³
Remark	B - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi, D - při expozici se významně uplatňuje pronikání faktoru kůží, K - karcinogen kategorie 1A a 1B (s větou H350, H350i), V - vdechovatelná frakce aerosolu, P - u látky nelze vyloučit závažné pozdní účinky (s větou H372, H373).
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)

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cadmium nitrate (10325-94-7)	
Czech Republic - Biological limit values	
Local name	Kadmium
BLV	0,005 mg/g creatinine Ukazatel: Kadmium - Biologicky vzorek: moči - Doba odběru: nerozhoduje 0,005 µmol/mmol Creatinine Ukazatel: Kadmium - Biologicky vzorek: moči - Doba odběru: nerozhoduje 0,005 mg/l Ukazatel: Kadmium - Biologicky vzorek: krvi - Doba odběru: nerozhoduje 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 [1]	0,001 mg/m ³ 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 2203 af 29. november 2021
Finland - Occupational Exposure Limits	
Local name	Kadmium, metalli
HTP (OEL TWA) [1]	0,02 mg/m ³
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden tutkimuskeskus)
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 terveystieteiden tutkimuskeskus)
France - Occupational Exposure Limits	
Local name	Cadmium et composés, en Cd
VME (OEL TWA)	0,05 mg/m ³
Remark	Valeurs recommandées/admises; certains ou tous ces composés sont classés cancérogène de catégorie 1A, 1B ou 2; certains ou tous ces composés sont classés mutagène de catégorie 1A, 1B ou 2; certains ou tous ces composés sont classés toxique pour la reproduction de catégorie 1A, 1B ou 2
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
Germany - Occupational Exposure Limits (TRGS 910)	
Local name	Cadmium und Cd-Verbindungen, als Carc.1A, Carc.1B eingestuft
Acceptable concentration (Weight conc.)	0,9 µg/m ³ (A)
Notes	b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000
Tolerance concentration (Weight conc.)	2 µg/m ³ (E)
Tolerance concentration excess factor	8

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cadmium nitrate (10325-94-7)	
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
Hungary - Occupational Exposure Limits	
Local name	KADMIUM ÉS SZERVETLEN VEGYÜLETEI (Cd-ra számítva)
AK (OEL TWA)	0,004 mg/m ³ 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
Hungary - Biological Exposure Indices	
Local name	Kadmium
BEI	0,002 mg/g creatinine Biológiai expozíciós (hatás) mutató: kadmium - Biológiai minta: vizeletben - Mintavétel ideje: n.k. (nem kritikus) 0,002 µmol/mmol Creatinine Biológiai expozíciós (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
Ireland - Occupational Exposure Limits	
Local name	Cadmium and its inorganic compounds
OEL TWA [1]	0,001 mg/m ³ I (Inhalable Fraction) 0,004 mg/m ³ 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 2021
Ireland - Biological limit values	
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)
Italy - Occupational Exposure Limits	
Local name	Cadmio e suoi composti inorganici
OEL TWA	0,001 mg/m ³ Frazione inalabile 0,004 mg/m ³ Valore limite fino all' 11 luglio 2027. Frazione inalabile. Frazione respirabile negli Stati membri che applicano, alla data di entrata in vigore della direttiva (UE) 2019/983, un sistema di biomonitoraggio con un valore limite biologico non superiore a 0,002 mg Cd/g di creatinina nelle urine
Regulatory reference	Allegato XLIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i.
Latvia - Occupational Exposure Limits	
Local name	Kadmijsuntā neorganiskie savienojumi
OEL TWA	0,01 mg/m ³

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cadmium nitrate (10325-94-7)	
Remark	Carc. 1B. leelpojamā frakcija kadmijam, ja biomonitoringa pieeja netiek īstenota. Respirējamā frakcija kadmijam, izmantojot biomonitoringa pieeju ar bioloģiskās ekspozīcijas rādītāju, kas nepārsniedz 2µg Cd/g kreatinīna urīnā, ir spēkā līdz 2027. gada 11. jūlijam.
Regulatory reference	Ministru kabineta 2008. gada 29. septembra noteikumi Nr. 803 (Grozījumi Ministru kabineta 2021. gada 18. februārī noteikumiem Nr. 109)
Latvia - Biological Exposure Indices	
Local name	Kadmijam
BEI	2 µg/g creatinine Kadmijam urīnā (paraugu iegūšanas laiks neietekmē analīžu rezultātu)
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2021. gada 18. februārī noteikumiem Nr. 110)
Luxembourg - Occupational Exposure Limits	
Local name	Cadmium et ses composés inorganiques
OEL TWA	0,004 mg/m ³ Fraction inhalable. Valeur limite jusqu'au 11 juillet 2027 0,001 mg/m ³ 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 cancérigènes 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/m ³ (until 11 July 2027 # sal-11 ta' Lulju 2027) 0,001 mg/m ³ (Inhalable fraction # Frazzjoni inalabbli)
Remark	Valur limit: 0.004 mg/m ³ (Frazzjoni inalabbli. 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 or mutagens at work (L.N.51 of 2021)
Netherlands - Occupational Exposure Limits	
Local name	Cadmiumchloride
TGG-8u (OEL TWA)	0,005 mg/m ³ (als Cd)
Remark	Kankerverwekkende stof
Regulatory reference	Arbeidsomstandighedenregeling 2022
Poland - Occupational Exposure Limits	
Local name	Kadm i jego związki nieorganiczne
NDS (OEL TWA)	0,001 mg/m ³ w przeliczeniu na Cd: frakcja wdychalna 0,004 mg/m ³ w przeliczeniu na Cd: frakcja wdychalna (do dnia 11 lipca 2027 r.)
Remark	Frakcja wdychalna – frakcja aerozolu wnikająca przez nos i usta, która po zdeponowaniu w drogach oddechowych stwarza zagrożenie dla zdrowia.
Regulatory reference	Dz. U. 2020 poz. 61
Portugal - Occupational Exposure Limits	
Local name	Cádmio, elemento e ompostos, expressos em Cd
OEL TWA	0,01 mg/m ³ 0,002 mg/m ³ R (Fração respirável)

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cadmium nitrate (10325-94-7)	
Remark	A2 (Agente carcinogénico confirmado nos animais de laboratorio con 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) 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 și compuși (exprimați în Cd)
OEL TWA	0,05 mg/m ³
Remark	C1B - poate provoca apariția cancerului; M2 - susceptibil de a provoca anomalii genetice; R2 - susceptibil de a dăuna fertilității
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
Romania - Biological limit values	
Local name	Cadmiu și compuși anorganici
BLV	2 µg/g creatinine Indicador biologic: Cadmiu - Material biologic: urină - Momentul recoltării: sfârșit de schimb 5 µg/l Indicador biologic: Cadmiu - Material biologic: sânge - Momentul recoltării: sfârșit de schimb 2 mg/l Indicador biologic: Proteine - Material biologic: urină - Momentul recoltării: sfârșit de schimb
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 584/2018)
Slovakia - Biological limit values	
Local name	Kadmium
BLV	7 µg/l Zisťovaný faktor: Kadmium - Vyšetrovaný materiál: moč - Čas odberu vzorky: a) žiadne obmedzenie
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (Zmena: 471/2011 Z.z.)
Slovenia - Occupational Exposure Limits	
Local name	kadmij
OEL TWA	0,001 mg/m ³ 0,004 mg/m ³
Remark	EU
Regulatory reference	Uradni list RS, št. 79/2019 z dne 24.12.2019
Spain - Occupational Exposure Limits	
Local name	Cadmio
VLA-ED (OEL TWA) [1]	0,01 mg/m ³ (estabilizado) no pirofórico. Fracción inhalable 0,002 mg/m ³ (estabilizado) no pirofórico. Fracción respirable 0,01 mg/m ³ (pirofórico). Fracción inhalable 0,002 mg/m ³ (pirofórico). Fracción respirable 0,01 mg/m ³ Compuestos de cadmio, como Cd, excepto los expresamente indicados. Fracción inhalable 0,002 mg/m ³ Compuestos de cadmio, como Cd, excepto los expresamente indicados. Fracción respirable

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cadmium nitrate (10325-94-7)	
Remark	VLB® (Agente químico que tiene Valor Límite Biológico específico en este documento), 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 2022. INSHT
Spain - Biological limit values	
Local name	Cadmio y compuestos inorgánicos
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) 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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Kadmium, och oorg föreningar (som Cd)
NGV (OEL TWA)	0,02 mg/m ³ totaldamm 0,002 mg/m ³ 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, 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); 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) [1]	0,025 mg/m ³ 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

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cadmium nitrate (10325-94-7)	
Iceland - Occupational Exposure Limits	
Local name	Kadmíum og ólífræn kadmíum efna-sambönd, reiknað sem kadmíum (Cd)
OEL TWA	0,03 mg/m ³ örfint ryk (gildir til 11. júlí 2027)
North Macedonia - Occupational Exposure Limits	
Local name	Кадмиум и соединенија (во форма на прав / аеросоли)
OEL TWA	0,03 mg/m ³ 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 0,015 mg/m ³ Други; (I) инхалабилна фракција – дел на вкупно суспендирани материи, кои работникот ги вдишува
KTV	4
Short time value [mg/m ³]	0,12 mg/m ³
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 покосо 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 ³ или во ml/m ³ (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)
USA - ACGIH - Occupational Exposure Limits	
Local name	Cadmium and compounds, as Cd
ACGIH OEL TWA	0,01 mg/m ³ (Cadmium, compounds, as Cd; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Cadmium, compounds, as Cd; 0.002 mg/m ³ ; 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 2022
USA - ACGIH - Biological Exposure Indices	
Local name	CADMIUM AND INORGANIC COMPOUNDS
BEI	5 µg/g creatinine Parameter: Cadmium - Medium: urine - Sampling time: Not critical - Notations: B 5 µg/l Parameter: Casmium - Medium: blood - Sampling time: Not critical - Notations: B
Regulatory reference	ACGIH 2019
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)

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cobalt dinitrate (10141-05-6)	
TRK (OEL TWA)	0,5 mg/m ³ (Herstellung von Cobaltpulver und Katalysatoren, Hartmetallund) (als Co berechnet, E) 0,1 mg/m ³ (im übrigen) (als Co berechnet, E)
TRK (OEL STEL)	2 mg/m ³ (Herstellung von Cobaltpulver und Katalysatoren, Hartmetallund) (als Co berechnet, E, 4x 15(Miw) min) 0,4 mg/m ³ (im übrigen) (als Co berechnet, E, 4x 15(Miw) min)
Remark	H, Sah. Krebszerzeugend: III A2
Regulatory reference	BGBl. II Nr. 156/2021
Austria - Biological limit values	
Local name	Cobalt und seine Verbindungen
BLV	10 µg/l Parameter: Cobalt - Untersuchungsmaterial: Harn
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. 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 ³
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Кобалт
OEL TWA	0,1 mg/m ³ (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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Kobalt i spojevi (kao Co)
GVI (OEL TWA) [1]	0,1 mg/m ³
Remark	Alergen (koža (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, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021)
Czech Republic - Occupational Exposure Limits	
Local name	Kobalt a jeho sloučeniny, jako Co
PEL (OEL TWA)	0,05 mg/m ³
NPK-P (OEL C)	0,1 mg/m ³

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cobalt dinitrate (10141-05-6)	
Remark	S - látka má senzibilizující účinek (s větou H317, H334), V - vdechovatelná frakce aerosolu, K - karcinogen kategorie 1A a 1B (s větou H350, H350i), T - toxický pro reprodukci kategorie 1A a 1B (s větou H360 včetně příslušných kódů).
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Cobalt, pulver, støv, røg og uorganiske forbindelser
OEL TWA [1]	0,01 mg/m ³ beregnet som Co
Remark	K (betyder, at stoffet anses for at kunne være kræftfremkaldende)
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Koobalt ja anorgaanilised ühendid (arvutatud koobaltile)
OEL TWA	0,05 mg/m ³
Remark	S (Sensibiliseeriv aine)
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Koboltti ja sen epäorgaaniset yhdisteet
HTP (OEL TWA) [1]	0,02 mg/m ³ 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.)	0,16 µg/m ³ (A)
Notes	b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000
Tolerance concentration (Weight conc.)	5 µg/m ³ (A)
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 ³
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 ³

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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 egyének „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) 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 [1]	0,02 mg/m ³
Remark	Sens. (In the workplace respiratory or dermal exposures to sensitising agents may occur. Sensitizers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The notation does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitizers 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))
Regulatory reference	Chemical Agents Code of Practice 2021
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) 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 ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325
Netherlands - Occupational Exposure Limits	
Local name	Kobalt
TGG-8u (OEL TWA)	0,02 mg/m ³ (stof en rook) (als Co)
Regulatory reference	Arbeidsomstandighedenregeling 2022
Poland - Occupational Exposure Limits	
Local name	Kobalt metaliczny i jego związki nieorganiczne
NDS (OEL TWA)	0,02 mg/m ³ w przeliczeniu na Co

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cobalt dinitrate (10141-05-6)	
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Cobalto e compostos inorgânicos, expressos em Co
OEL TWA	0,02 mg/m ³
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
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) 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/m ³
OEL STEL	0,1 mg/m ³
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
Romania - Biological limit values	
Local name	Cobalt
BLV	15 µg/l Indicador biologic: Cobalt - Material biologic: urină - Momentul recoltării: sfârşit de săptămână 1 µg/l Indicador biologic: Cobalt - Material biologic: sânge - Momentul recoltării: sfârşit de săptămână
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 584/2018)
Slovakia - Occupational Exposure Limits	
Local name	Kobalt a jeho zlúčeniny (ako Co)
NPHV (OEL TWA) [1]	0,05 mg/m ³
Remark	S - znamená, že faktor môže spôsobiť senzibilizáciu
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Spain - Occupational Exposure Limits	
Local name	Cobalto elemental
VLA-ED (OEL TWA) [1]	0,02 mg/m ³
Remark	VLB® (Agente químico que tiene Valor Límite Biológico), Sen (Sensibilizante).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
Spain - Biological limit values	
Local name	Cobalto y compuestos inorgánicos excepto óxidos

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cobalt dinitrate (10141-05-6)	
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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Kobolt, och oorg. föreningar (som Co)
NGV (OEL TWA)	0,02 mg/m ³ 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) [1]	0,1 mg/m ³ 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/m ³
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) [1]	0,05 mg/m ³ (i) / (e)
Critical toxicity	Poumons, Asthme, Cœur / Lunge, Asthma, Herz

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cobalt dinitrate (10141-05-6)	
Notation	R, S, C1 _B , M2, R1 _{BF} , B / H, S, C1 _B , M2, R1 _{BF} , B
Remark	HSE, NIOSH, BG
Regulatory reference	www.suva.ch, 28.03.2022
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/m ³ (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 2022
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 2019
chromium trinitrate (13548-38-4)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Chromium metal
IOEL TWA	2 mg/m ³ 2 mg/m ³
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC COMMISSION DIRECTIVE 2006/15/EC
Albania - Occupational Exposure Limits	
Local name	Krom, Metal
OEL TWA	2 mg/m ³
Regulatory reference	VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES "PËR MBROJTJEN E SIGURISË DHE SHËNDËTIT 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 ³
Remark	Sh
Regulatory reference	BGBl. II Nr. 156/2021

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chromium trinitrate (13548-38-4)	
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 ³
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Croatia - Occupational Exposure Limits	
Local name	Krom, metal (kao Cr)
GVI (OEL TWA) [1]	2 mg/m ³
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 1/2021)
Czech Republic - Occupational Exposure Limits	
Local name	Prach z chromu
PEL (OEL TWA)	0,5 mg/m ³
Remark	Prachy s převážně dráždivým účinkem.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Chrom, pulver og opløselige chromi- og chromosalte
OEL TWA [1]	0,5 mg/m ³ beregnet som Cr
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Kroom (metall) ja tema anorgaanilised ühendid, v. akroomhape ja kromaadid (arvutatud kroomile)
OEL TWA	2 mg/m ³
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Kromi, metalli
HTP (OEL TWA) [1]	0,5 mg/m ³ 0,005 mg/m ³
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
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 ³
Remark	Valeurs réglementaires indicatives
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Chrom und anorganische Chrom (II) und (III)-Verbindungen
AGW (OEL TWA) [1]	2 mg/m ³ E (mg/m ³)

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chromium trinitrate (13548-38-4)	
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 ³
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 ³
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 ³
Remark	i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát), 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); 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
BEI	0,01 mg/g creatinine Biológiai expozíciós (hatás) mutató: króm - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén) 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 [1]	2 mg/m ³
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2021
Lithuania - Occupational Exposure Limits	
Local name	Chromas, neorganinio chromo (II) junginiai ir neorganinio chromo (III) junginiai (netirpūs)
IPRV (OEL TWA)	2 mg/m ³
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)

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chromium trinitrate (13548-38-4)	
Luxembourg - Occupational Exposure Limits	
Local name	Métal chrome, composés de chrome inorganiques (II) et composés de chrome inorganiques (insolubles) (III)
OEL TWA	2 mg/m ³
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/m ³
Regulatory reference	S.L.424.24 - Chemical Agents at Work Regulations (L.N.356 of 2021)
Netherlands - Occupational Exposure Limits	
Local name	Chroom
TGG-8u (OEL TWA)	0,5 mg/m ³ (metallisch)
Regulatory reference	Arbeidsomstandighedenregeling 2022
Poland - Occupational Exposure Limits	
Local name	Chrom metaliczny
NDS (OEL TWA)	0,5 mg/m ³
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Crómio e compostos inorgânicos, expressos em Cr
OEL TWA	0,5 mg/m ³ Metal e compostos de crómio (III) 0,05 mg/m ³ Compostos de crómio (VI) solúveis em água 0,01 mg/m ³ 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 metalic, compuși anorganici ai cromului (II) și compuși anorganici ai cromului (insolubili) (III)
OEL TWA	2 mg/m ³
Slovakia - Occupational Exposure Limits	
Local name	Chróm anorg. zlúč. chrómu (II) a (III) – nerozpustné (ako Cr)
NPHV (OEL TWA) [1]	2 mg/m ³
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	krom – kovinski, anorganske kromove (II) spojine in anorganske kromove (III) spojine (netopne)
OEL TWA	2 mg/m ³
OEL STEL	2 mg/m ³
Remark	EU
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021

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chromium trinitrate (13548-38-4)	
Spain - Occupational Exposure Limits	
Local name	Cromo
VLA-ED (OEL TWA) [1]	2 mg/m ³ metal 2 mg/m ³ Compuestos inorgánicos de Cr (II) y de Cr (III) insolubles, como Cr 0,05 mg/m ³ Cromo (VI), Compuestos inorgánicos, excepto los expresamente indicados. Compuestos solubles, como Cr 0,01 mg/m ³ Cromo (VI), Compuestos inorgánicos, excepto los expresamente indicados. 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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Krom, och oorg. (II, III)-föreningar (som Cr)
NGV (OEL TWA)	0,5 mg/m ³ 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, Arbetskyddsstyrelsen, 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)
United Kingdom - Occupational Exposure Limits	
Local name	Chromium
WEL TWA (OEL TWA) [1]	0,5 mg/m ³ 0,5 mg/m ³ Chromium (II) compounds (as Cr) 0,5 mg/m ³ 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 ³
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Switzerland - Occupational Exposure Limits	
Local name	Alkalichromate (s. Chrom(VI)-Verbindungen)
MAK (OEL TWA) [1]	0,005 mg/m ³ 0,005 mg/m ³ 0,5 mg/m ³ 0,005 mg/m ³ 0,005 mg/m ³
Critical toxicity	VRS, Peau / OAW, Haut
Notation	S / S
Remark	e(mg/m ³) - H ^a S ^b B C1 _A - Lungenkrebs - DFG, NIOSH, ^a kein H für Barium-, Blei-, Strontium- und Zinkchromat, ^b kein S für Barium- und Bleichromat
Regulatory reference	www.suva.ch, 28.03.2022

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chromium trinitrate (13548-38-4)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Metallic chromium, as Cr(0)
ACGIH OEL TWA	0,5 mg/m ³ (I - Inhalable particulate matter)
Remark (ACGIH)	TLV® Basis: Resp tract irr
Regulatory reference	ACGIH 2022
copper dinitrate (3251-23-8)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Copper
IOEL TWA	0,01 mg/m ³ (respirable fraction) 0,01 mg/m ³ (respirable fraction)
Remark	(Year of adoption 2014) (Year of adoption 2014)
Regulatory reference	SCOEL Recommendations SCOEL Recommendations
Austria - Occupational Exposure Limits	
Local name	Kupfer und seine Verbindungen
MAK (OEL TWA)	1 mg/m ³ (als Cu berechnet, E) 0,1 mg/m ³ (als Rauch, als Cu berechnet, A)
MAK (OEL STEL)	4 mg/m ³ (als Cu berechnet, E, 4x 15(Miw) min) 0,4 mg/m ³ (als Rauch, als Cu berechnet, A, 4x 15(Miw) min)
Regulatory reference	BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Cuivre (en Cu) # Koper (als Cu)
OEL TWA	0,2 mg/m ³ (fumées) # (rook) 1 mg/m ³ (poussières et brouillards de) # (stof en nevel)
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Мед
OEL TWA	0,1 mg/m ³ (метални пари (като мед)) 1 mg/m ³ (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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Bakar
GVI (OEL TWA) [1]	0,2 mg/m ³ dim (kao Cu) 1 mg/m ³ prašina (kao Cu)
KGVI (OEL STEL)	2 mg/m ³ prašina (kao Cu)
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021)
Czech Republic - Occupational Exposure Limits	
Local name	Měď

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copper dinitrate (3251-23-8)	
PEL (OEL TWA)	1 mg/m ³ (prach) (V) 0,1 mg/m ³ (dýmy) (R)
NPK-P (OEL C)	2 mg/m ³ (prach) (V) 0,2 mg/m ³ (dýmy) (R)
Remark	V - vdechovatelná frakce aerosolu, R - respirabilní frakce aerosolu.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Kobber
OEL TWA [1]	1 mg/m ³ pulver og støv 0,1 mg/m ³ røg, beregnet som Cu
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Vask ja anorgaanilised ühendid (arvutatud vasele)
OEL TWA	1 mg/m ³ kogu tolm 0,2 mg/m ³ peentolm
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Kupari-(II)-nitraatti
HTP (OEL TWA) [1]	0,02 mg/m ³ Cu, alveolijae
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
France - Occupational Exposure Limits	
Local name	Cuivre
VME (OEL TWA)	0,2 mg/m ³ (fumées) 1 mg/m ³ (poussières), en Cu
VLE (OEL C/STEL)	2 mg/m ³ (poussières), en Cu
Remark	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
Hungary - Occupational Exposure Limits	
Local name	RÉZ és vegyületei (Cu-re számítva)
AK (OEL TWA)	0,1 mg/m ³ 0,01 mg/m ³ füst, respirábilis frakció
CK (OEL STEL)	0,2 mg/m ³
Remark	R (Azok az anyagok, amelyek egészségkárosító hatása RÖVID expozíció hatására jelentkeznek)
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 [1]	0,2 mg/m ³ Fume 1 mg/m ³ Dusts and mists
Regulatory reference	Chemical Agents Code of Practice 2021

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copper dinitrate (3251-23-8)	
Latvia - Occupational Exposure Limits	
Local name	Varš
OEL TWA	0,5 mg/m ³
OEL STEL	1 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325
Netherlands - Occupational Exposure Limits	
Local name	Koper
TGG-8u (OEL TWA)	0,1 mg/m ³ (Koper en anorganische koperverbindingen (inhaleerbaar); Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value; inhaleerbaar)
Regulatory reference	Arbeidsomstandighedenregeling 2022
Poland - Occupational Exposure Limits	
Local name	Miedź i jej związki nieorganiczne
NDS (OEL TWA)	0,2 mg/m ³ w przeliczeniu na Cu
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Cobre
OEL TWA	0,2 mg/m ³ Fumos, expressos em Cu 1 mg/m ³ 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/m ³ (Pulberi)
OEL STEL	0,2 mg/m ³ (Fumuri) 1,5 mg/m ³ (Pulberi)
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
Slovakia - Occupational Exposure Limits	
Local name	Meď a jej anorganické zlúčeniny (ako Cu)
NPHV (OEL TWA) [1]	1 mg/m ³ inhalovateľná frakcia 0,2 mg/m ³ respirabilná frakcia a dymy
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Spain - Occupational Exposure Limits	
Local name	Compuestos de cobre
VLA-ED (OEL TWA) [1]	0,01 mg/m ³ 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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Koppar, och oorg. Föreningar (som Cu)
NGV (OEL TWA)	0,01 mg/m ³ respirabel fraktion

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copper dinitrate (3251-23-8)	
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]	1 mg/m ³ dusts and mists (as Cu)
WEL STEL (OEL STEL)	2 mg/m ³ dusts and mists (as Cu)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Koppar
OEL TWA	1 mg/m ³ duft og ryk, (heildaryrk) 0,1 mg/m ³ 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
Grenseverdi (OEL TWA) [1]	0,1 mg/m ³ Røyk 1 mg/m ³ Støv
Regulatory reference	FOR-2021-06-28-2248
Switzerland - Occupational Exposure Limits	
Local name	Cuivre et ses composés inorganiques / Kupfer und seine anorganischen Verbindungen
MAK (OEL TWA) [1]	0,1 mg/m ³ (i) / (e)
KZGW (OEL STEL)	0,2 mg/m ³ (i) / (e)
Critical toxicity	Poumons, Fimétal / Lunge, Metallrauch
Notation	SS _C / SS _C
Remark	NIOSH
Regulatory reference	www.suva.ch, 28.03.2022
USA - ACGIH - Occupational Exposure Limits	
Local name	Copper, as Cu
ACGIH OEL TWA	0,2 mg/m ³ (Fume) 1 mg/m ³ (Dusts and mists)
Remark (ACGIH)	TLV® Basis: Irr; GI; metal fume fever
Regulatory reference	ACGIH 2022
iron trinitrate (10421-48-4)	
Belgium - Occupational Exposure Limits	
Local name	Fer (sels solubles) (en Fe) # IJzerzouten (oplosbaar) (als Fe)
OEL TWA	1 mg/m ³ (Fer (sels solubles) (en Fe); Belgium; Time-weighted average exposure limit 8 h)
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Croatia - Occupational Exposure Limits	
Local name	Željezove soli (kao Fe)

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iron trinitrate (10421-48-4)	
GVI (OEL TWA) [1]	1 mg/m ³
KGVI (OEL STEL)	2 mg/m ³
Regulatory reference	Pravilnik o zaštitu radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021)
Denmark - Occupational Exposure Limits	
Local name	Jernsalte, opløselige
OEL TWA [1]	1 mg/m ³ beregnet som Fe
Regulatory reference	BEK nr 2203 af 29. november 2021
Greece - Occupational Exposure Limits	
Local name	Σιδήρου (διαλυτά άλατα ως Fe)
OEL TWA	1 mg/m ³
OEL STEL	2 mg/m ³
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]	1 mg/m ³
OEL STEL	2 mg/m ³
Regulatory reference	Chemical Agents Code of Practice 2021
Portugal - Occupational Exposure Limits	
Local name	Ferro, sais solúveis de ferro, expressos em Fe
OEL TWA	1 mg/m ³
Regulatory reference	Norma Portuguesa NP 1796:2014
Spain - Occupational Exposure Limits	
Local name	Hierro: Sales solubles
VLA-ED (OEL TWA) [1]	1 mg/m ³ 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 2022. INSHT
United Kingdom - Occupational Exposure Limits	
Local name	Iron salts
WEL TWA (OEL TWA) [1]	1 mg/m ³ (as Fe)
WEL STEL (OEL STEL)	2 mg/m ³ (as Fe)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Járnsölt, uppleysanleg, sem Fe
OEL TWA	1 mg/m ³
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)

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iron trinitrate (10421-48-4)	
Grenseverdi (OEL TWA) [1]	1 mg/m ³
Regulatory reference	FOR-2021-06-28-2248
Switzerland - Occupational Exposure Limits	
Local name	Fer (sels solubles) / Eisensalze (löslich)
MAK (OEL TWA) [1]	1 mg/m ³ (i) / (e)
Critical toxicity	VRS, Peau / OAW, Haut
Remark	OSHA
Regulatory reference	www.suva.ch, 28.03.2022
USA - ACGIH - Occupational Exposure Limits	
Local name	Iron salts, soluble, as Fe
ACGIH OEL TWA	1 mg/m ³ (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 2022
mercury nitrate (10045-94-0)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Mercury
IOEL TWA	0,02 mg/m ³ (Mercury, divalent inorganic compounds; EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value)
Regulatory reference	COMMISSION DIRECTIVE 2009/161/EU
EU - Biological Limit Value (BLV)	
Local name	Mercury and inorganic divalent mercury compounds
BLV	10 µg/l Parameter: Hg - Medium: blood 30 µg/g creatinine Parameter: Hg - Medium: urine
Regulatory reference	SCOEL List of recommended health-based BLVs and BGVs
Austria - Occupational Exposure Limits	
Local name	Quecksilber und anorganische Quecksilberverbindungen
MAK (OEL TWA)	0,02 mg/m ³
MAK (OEL STEL)	0,08 mg/m ³
Remark	H,Sh
Regulatory reference	BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Mercuré (composés alkylés) (en Hg) # Kwik (alkylverbindingen) (als Hg)
OEL TWA	2 mg/m ³ (Mercuré 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 ³

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mercury nitrate (10045-94-0)	
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 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Живак
OEL TWA	0,02 mg/m ³ Живак и двувалентни неорганични живачни съединения, включително живачен окис и живачен хлорид (измерени като живак) 0,05 mg/m ³ Пари на метала в елементно състояние 0,1 mg/m ³ Неорганични и арилни съединения 0,01 mg/m ³ Органични и алкилни съединения
Remark	(1) По време на наблюдение на експозицията на живак и двувалентни неорганични съединения следва да се вземат под внимание съответните методи за биологично наблюдение, допълващи индикативните гранични стойности за професионална експозиция; * (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. 47 от 2021 г., в сила от 04.06.2021 г.)
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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Živa anorganski spojevi (kao Hg)
GVI (OEL TWA) [1]	0,05 mg/m ³
Remark	T (otrovno); N (opasno za okoliš)
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граничним vrijednostima izloženosti i biološkim граничним vrijednostima (NN 1/2021)
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 10 µg/l Karakteristični pokazatelj: živa - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično 16,9 µmol/mol creatinine Karakteristični pokazatelj: živa - Biološki uzorak: mokraća - Vrijeme uzorkovanja: jednokratni uzorak ili mokraća skupljen tijekom 24 sata 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, граничним vrijednostima izloženosti i biološkim граничним vrijednostima (NN 91/2018)
Czech Republic - Occupational Exposure Limits	
Local name	Rtu

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mercury nitrate (10045-94-0)	
PEL (OEL TWA)	0,05 mg/m ³
PEL (OEL TWA) [ppm]	0,006 ppm
NPK-P (OEL C)	0,15 mg/m ³
NPK-P (OEL C) [ppm]	0,018 ppm
Remark	B - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi, D - při expozici se významně uplatňuje pronikání faktoru kůží, T - toxický pro reprodukci kategorie 1A a 1B (s větou H360 včetně příslušných kódů). (5) Při kontrole expozice rtuti a anorganických sločenin dvojmocné rtuti se přihlíží k příslušným biologickým expozičním testům, které doplňují směrné limitní hodnoty expozice na pracovišti.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Czech Republic - Biological limit values	
Local name	Rtuť
BLV	0,1 mg/g creatinine Ukazatel: Rtuť - Biologický vzorek: moči - Doba odběru: nerozhoduje 0,056 μmol/mmol Creatinine Ukazatel: Rtuť - Biologický vzorek: moči - Doba odběru: nerozhoduje
Regulatory reference	Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Kviksølv og uorganiske forbindelser inkl. dampe
OEL TWA [1]	0,02 mg/m ³ beregnet som Hg
Remark	H (betyder, at stoffet kan optages gennem huden)
Regulatory reference	BEK nr 2203 af 29. november 2021
Finland - Occupational Exposure Limits	
Local name	Elohopea-(II)-nitraatti
HTP (OEL TWA) [1]	0,02 mg/m ³ Hg
Remark	Iho, melu
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteistie)
Finland - Biological limit values	
Local name	Elohopea-(II)-nitraatti
BLV	50 nmol/l Parametri: Veren epäorganisen elohopea - Näytteenottoajankohta: Työviikon lopulla. Vuorokaudenajalla ei merkitystä. 140 nmol/l Parametri: Virtsan elohopea - Näytteenottoajankohta: Työpäivän jälkeinen aamu työviikon tai altistumisjakson lopulla.
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteistie)
France - Occupational Exposure Limits	
Local name	Mercure, en Hg
VME (OEL TWA)	0,01 mg/m ³ (composés alkylés) 0,1 mg/m ³ (composés arylés et inorganiques)
Remark	Valeurs recommandées/admises; risque de pénétration percutanée
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Quecksilber
AGW (OEL TWA) [1]	0,02 mg/m ³

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mercury nitrate (10045-94-0)	
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
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 ³
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 υδράργυρου (μετρημένες ως υδάργγρος)
OEL TWA	0,1 mg/m ³
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 - Occupational Exposure Limits	
Local name	HIGANY ÉS SZERVETLEN VEGYÜLETEI*** (Hg-ra számítva)
AK (OEL TWA)	0,02 mg/m ³
Remark	sz (Túlrézkénységet okozó (szenzibilizáló) tulajdonságú anyag. Az anyagra érzékeny egyéneken „túlrézkénységen” alapuló bőr-, légzőrendszeri, esetleg más szervet/szervrendszert károsító megbetegedést okozhat), b (Bőrön át is felszívódik), BEM (biológiai expozíciós mutató); EU3 (2009/161 /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	Higany (szervetlen)
BEI	0,03 mg/g creatinine Biológiai expozíciós (hatás) mutató: higany - Biológiai minta: vizeletben - Mintavétel ideje: n.k. (nem kritikus) 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

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mercury nitrate (10045-94-0)	
OEL TWA [1]	0,02 mg/m ³
OEL STEL	0,03 mg/m ³
Remark	Sk (Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body)
Regulatory reference	Chemical Agents Code of Practice 2021
Latvia - Occupational Exposure Limits	
Local name	Dzīvsudrabsuntā neorganiskie savienojumi(pēc dzīvsudraba)
OEL TWA	0,02 mg/m ³
Remark	letekme uz dzirdi
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2015. gada 7. aprīlī noteikumiem Nr. 163)
Latvia - Biological Exposure Indices	
Local name	Dzīvsudrabam
BEI	10 µg/l Dzīvsudrabam asinīs (references lielums dzīvsudraba koncentrācijai asinīs aroda neekspozētai populācijai < 1µg/l) 30 µg/g creatinine Dzīvsudrabam urīnā (references lielums dzīvsudraba koncentrācijai urīnā < 5 µg Hg/g kreatinīna jeb 3,5 µg/L)
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2021. gada 18. februārī noteikumiem Nr. 110)
Malta - Occupational Exposure Limits	
Local name	Mercury and divalent inorganic mercury compounds including mercuric oxide and mercuric chloride (measured as mercury) # Merkurju u komposti divivalenti inorganīci tal-merkurju inkluži l-mercuric oxide u l-mercuric chloride (mkejllin bhala merkurju)
OEL TWA	0,02 mg/m ³
Remark	During exposure monitoring for mercury and its divalent inorganic compounds, account should be taken of relevant biological monitoring techniques that complement the OELV. # Matul il-monitoraġġ tal-esponiment għall-Merkurju u l-komposti divivalenti inorganīci tiegħu, għandhom jitqiesu t-tekniki bijoloġiċi ta' monitoraġġ li jikkomplementaw l-OELV.
Regulatory reference	S.L.424.24 - Chemical Agents at Work Regulations (L.N.356 of 2021)
Netherlands - Occupational Exposure Limits	
TGG-8u (OEL TWA)	0,02 mg/m ³ (Kwik en tweewaardige anorganische kwikverbindingen (gemeten als kwik); Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value; als Hg)
Poland - Occupational Exposure Limits	
Local name	Rtęć , pary i jej związki nieorganiczne w przeliczeniu na Hg
NDS (OEL TWA)	0,02 mg/m ³
Remark	Skóra (Oznakowanie substancji notacją „skóra” oznacza, że wchłanianie substancji przez skórę może być tak samo istotne jak przy narażeniu drogą oddechową).
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
OEL TWA	0,1 mg/m ³ 0,025 mg/m ³
OEL STEL	0,03 mg/m ³

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mercury nitrate (10045-94-0)	
Portugal - Biological Exposure Indices	
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
Romania - Occupational Exposure Limits	
Local name	Mercur
OEL TWA	0,05 mg/m ³
OEL STEL	0,15 mg/m ³
Serbia - Occupational Exposure Limits	
Local name	жива и двовалентна неорганска једињења живе
OEL TWA	0 mg/m ³ (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)
Slovakia - Occupational Exposure Limits	
Local name	Ortuť a bivalentné anorganické zlúčeniny vrátane oxidu ortuťnatého a chloridu ortuťnatého (ako Hg)
NPHV (OEL TWA) [1]	0,1 mg/m ³
Remark	Ortuť je látka s vážnymi kumulatívnymi účinkami, preto je potrebné doplniť monitorovanie ovzdušia zdravotným dohľadom podľa § 12 a prílohy č. 2.
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Slovakia - Biological limit values	
Local name	Ortuť a anorganické zlúčeniny ortuti
BLV	25 µg/g creatinine Zisťovaný faktor: Ortuť - Vyšetovaný materiál: moč - Čas odberu vzorky: a) žiadne obmedzenie 15 µg/l Zisťovaný faktor: Ortuť - Vyšetovaný materiál: krv - Čas odberu vzorky: c) pri dlhodobej expozícii; po viacerých pracovných zmenách
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (Zmena: 471/2011 Z.z.)
Slovenia - Occupational Exposure Limits	
Local name	živo srebro
OEL TWA	0,02 mg/m ³
OEL STEL	0,16 mg/m ³
Remark	BAT (Biološka mejna vrednost), K (Lastnost lažjega prehajanja snovi v organizem skozi kožo), EU
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Slovenia - Biological limit values	
Local name	živo srebro (elementarno in anorganske spojine)

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mercury nitrate (10045-94-0)	
BLV	0,25 µg/g creatinine Parameter: živo srebro - Biološki vzorec: urin - Čas vzorčenja: ni pomembno 30 µg/l Parameter: živo srebro - Biološki vzorec: urin - Čas vzorčenja: ni pomembno
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Spain - Occupational Exposure Limits	
Local name	Mercurio
VLA-ED (OEL TWA) [1]	0,02 mg/m ³ elemental 0,02 mg/m ³ Compuestos inorgánicos divalentes de mercurio, como Hg 0,01 mg/m ³ Alquil-compuestos, como Hg 0,1 mg/m ³ Aril-compuestos, como Hg
VLA-EC (OEL STEL)	0,03 mg/m ³ Alquil-compuestos, como Hg
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), 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: http://www.msssi.gob.es/ciudadanos/productos.do?tipo=plaguicidas Base de datos de productos fitosanitarios http://www.magrama.gob.es/agricultura/pags/fitos/registro/fichas/pdf/Lista_sa.pdf), 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).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
Spain - Biological limit values	
Local name	Mercurio elemental y compuestos inorgánicos

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mercury nitrate (10045-94-0)	
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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Kvicksilver, och oorg. föreningar (som Hg)
NGV (OEL TWA)	0,02 mg/m ³ 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 vissa 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) [1]	0,02 mg/m ³ 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/m ³
Remark	H
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)

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mercury nitrate (10045-94-0)	
Norway - Occupational Exposure Limits	
Local name	Kvikksølv og kvikksølvforb. (unntatt alkylforbindelser) (beregnet som Hg)
Grenseverdi (OEL TWA) [1]	0,02 mg/m ³
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; E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet.
Regulatory reference	FOR-2021-06-28-2248
Switzerland - Occupational Exposure Limits	
Local name	Quecksilber (Dampf u. Aerosol)
MAK (OEL TWA) [1]	0,05 mg/m ³ 0,01 mg/m ³ 0,02 mg/m ³
MAK (OEL TWA) [2]	0,005 ppm
KZGW (OEL STEL)	0,4 mg/m ³ 0,16 mg/m ³
KZGW (OEL STEL) [ppm]	0,04 ppm
Critical toxicity	Rein, SNC / Niere, ZNS
Notation	R, S, B / H, S, B
Remark	S B - ZNS, Niere - HSE, NIOSH, OSHA
Regulatory reference	www.suva.ch, 28.03.2022
USA - ACGIH - Occupational Exposure Limits	
Local name	Mercury, elemental and inorganic forms, as Hg
ACGIH OEL TWA	0,025 mg/m ³ (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 2023
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 2019
potassium nitrate (7757-79-1)	
Bulgaria - Occupational Exposure Limits	
Local name	Калиев нитрат
OEL TWA	5 mg/m ³
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. 47 от 2021 г., в сила от 04.06.2021 г.)
Latvia - Occupational Exposure Limits	
Local name	Kālija nitrāts
OEL TWA	5 mg/m ³

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potassium nitrate (7757-79-1)	
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
Lithuania - Occupational Exposure Limits	
Local name	Kalio nitratas
IPRV (OEL TWA)	5 mg/m ³
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
lithium nitrate (7790-69-4)	
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Lithiumverbindungen, anorganische, mit Ausnahme von Lithium und stärker reizenden Lithiumverbindungen
AGW (OEL TWA) [1]	0,2 mg/m ³ (E)
Peak exposure limitation factor	1(I)
Remark	Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden; 10 - Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls; DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)
Regulatory reference	TRGS900
Sweden - Occupational Exposure Limits	
Local name	Litium och föreningar (som Li)
KTV (OEL STEL)	0,02 mg/m ³ inhalerbar fraktion
Remark	3 (Med inhalerbar fraktion menas den mängd partiklar, av totalmängden partiklar i luften, som man inandas genom näsa och mun)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
Switzerland - Occupational Exposure Limits	
Local name	Lithium, comp. inorg. De / Lithiumverbindungen, anorganische
MAK (OEL TWA) [1]	0,2 mg/m ³ (i) / (e)
KZGW (OEL STEL)	0,2 mg/m ³ (i) / (e)
Critical toxicity	VRS, Peau, Yeux / OAW, Haut, Auge
Notation	SS _c / SS _c
Remark	OSHA
Regulatory reference	www.suva.ch, 28.03.2022
manganese dinitrate (10377-66-9)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Manganese
IOEL TWA	0,2 mg/m ³ (inhalable fraction) 0,05 mg/m ³ (respirable fraction) 0,2 mg/m ³ (inhalable fraction) 0,05 mg/m ³ (respirable fraction)
Remark	(Year of adoption 2011) (Year of adoption 2011)
Regulatory reference	SCOEL Recommendations SCOEL Recommendations

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manganese dinitrate (10377-66-9)	
Austria - Occupational Exposure Limits	
Local name	Mangan und seine anorganischen Verbindungen: Mangan
MAK (OEL TWA)	0,2 mg/m ³ (als Mn berechnet, E) 0,05 mg/m ³ (als Mn berechnet, A)
MAK (OEL STEL)	1,6 mg/m ³ (als Mn berechnet, E, 4x 15(Miw) min) 0,16 mg/m ³ (als Mn berechnet, A, 4x 15(Miw) min)
Regulatory reference	BGBl. 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 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. 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)
OEL TWA	0,2 mg/m ³
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Манган
OEL TWA	0,3 mg/m ³ оксид и неорганични съединения (като манган)
OEL STEL	3 mg/m ³ оксид и неорганични съединения (като манган)
Croatia - Occupational Exposure Limits	
Local name	Mangan i anorganski spojevi mangana (kao Mn)
GVI (OEL TWA) [1]	0,2 mg/m ³ U (ukupna prašina) 0,05 mg/m ³ R (respirabilna prašina)
Remark	Direktiva: 2017/164/EU
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граниčnim vrijednostima izloženosti i biološkim граниčnim vrijednostima (NN 1/2021)
Czech Republic - Occupational Exposure Limits	
Local name	Mangan
PEL (OEL TWA)	1 mg/m ³
NPK-P (OEL C)	2 mg/m ³
Remark	V - vdechovatelná frakce aerosolu, R - respirabilní frakce aerosolu.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)

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manganese dinitrate (10377-66-9)	
Denmark - Occupational Exposure Limits	
Local name	Mangan, pulver, støv og uorganiske forbindelser
OEL TWA [1]	0,2 mg/m ³ beregnet som Mn 0,1 mg/m ³ respirabel
Remark	E (betyder, at stoffet har en EF-grænseværdi)
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Mangaan ja anorgaanilised ühendid (arvutatud mangaanile)
OEL TWA	0,2 mg/m ³ kogu tolm 0,05 mg/m ³ peentolm
Remark	1 (Peentolm koosneb alla 2,5-mikromeetrise läbimõõduga osakestest, mis võivad jõuda koos sissehingatava õhuga kopsu alveoolidesse (respireeritav fraktsioon))
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Mangaani, metalli
HTP (OEL TWA) [1]	0,02 mg/m ³
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Mangan und seine anorganischen Verbindungen
AGW (OEL TWA) [1]	0,02 mg/m ³ A (mg/m ³) 0,2 mg/m ³ E (mg/m ³)
Peak exposure limitation factor	8(II)
Remark	DFG,Y,10,20
Regulatory reference	TRGS900
Hungary - Occupational Exposure Limits	
Local name	MANGÁN ÉS SZERVETLEN SÓI (mangán-tetraoxid kivételével, Mn-ra számítva)
AK (OEL TWA)	5 mg/m ³
CK (OEL STEL)	20 mg/m ³
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 [1]	0,2 mg/m ³ I (Inhalable Fraction) 0,02 mg/m ³ R (Respirable Fraction)
OEL STEL	3 mg/m ³
Regulatory reference	Chemical Agents Code of Practice 2021
Latvia - Occupational Exposure Limits	
Local name	Mangānsmetināšanas aerosolos(kondensācijas aerosols)
OEL TWA	0,1 mg/m ³

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manganese dinitrate (10377-66-9)	
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
Netherlands - Occupational Exposure Limits	
Local name	Mangaan en anorganische mangaan-verbindingen
TGG-8u (OEL TWA)	0,2 mg/m ³ Inhaleerbaar (als mangaan)
TGG-15min (OEL STEL)	0,05 mg/m ³ Respirabel (als mangaan)
Regulatory reference	Arbeidsomstandighedenregeling 2022
Poland - Occupational Exposure Limits	
Local name	Mangan i jego związki nieorganiczne w przeliczeniu na Mn
NDS (OEL TWA)	0,3 mg/m ³
Remark	Frakcja wdychalna – frakcja aerozolu wnikająca przez nos i usta, która po zdeponowaniu w drogach oddechowych stwarza zagrożenie dla zdrowia. Frakcja respirabilna – frakcja aerozolu wnikająca do dróg oddechowych, która stwarza zagrożenie dla zdrowia po zdeponowaniu w obszarze wymiany gazowej.
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Manganês e compostos inorgânicos, expressos em Mn
OEL TWA	0,02 mg/m ³ R (Fração respirável) 0,1 mg/m ³ I (Fração inalável)
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/m ³
OEL STEL	3 mg/m ³
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
Slovakia - Occupational Exposure Limits	
Local name	Mangán a jeho anorganické zlúčeniny
NPHV (OEL TWA) [1]	0,5 mg/m ³
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	mangan in njegove anorganske spojine vključno strimanganovim tetraoksidom
OEL TWA	0,5 mg/m ³
OEL STEL	2 mg/m ³
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), EU
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Spain - Occupational Exposure Limits	
Local name	Manganeso

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manganese dinitrate (10377-66-9)	
VLA-ED (OEL TWA) [1]	0,2 mg/m ³ elemental. Fracción inhalable 0,2 mg/m ³ Compuestos inorgánicos de Manganese, como Mn. Fracción inhalable 0,05 mg/m ³ elemental. Fracción respirable 0,05 mg/m ³ Compuestos inorgánicos de manganese, 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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Mangan, och oorg. föreningar (som Mn)
NGV (OEL TWA)	0,2 mg/m ³ totaldamm 0,1 mg/m ³ 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) [1]	0,05 mg/m ³ 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/m ³ heildarryk 1 mg/m ³ örfint ryk
OEL STEL	5 mg/m ³ 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) [1]	0,2 mg/m ³ Inhalerbar fraksjon 0,05 mg/m ³ Respirabel fraksjon
Remark	E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet; 9) 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-2021-06-28-2248
North Macedonia - Occupational Exposure Limits	
Local name	Манган и неоргански соединенија
OEL TWA	0,5 mg/m ³ (1) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува
KTV	4
Short time value [mg/m ³]	2 mg/m ³

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manganese dinitrate (10377-66-9)	
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 ³ или во ml/m ³ (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) [1]	0,5 mg/m ³ (i) / (e)
Critical toxicity	SNC / ZNS
Notation	SS _c , B, P / SS _c , B, P
Remark	NIOSH
Regulatory reference	www.suva.ch, 28.03.2022
Switzerland - BAT	
Local name	Manganèse et ses composés inorg. / Mangan und seine anorganischen Verbindungen
BAT	20 µg/l (364 nmol/l; Paramètre biologique: Manganèse; Substrat d'examen: Sang complet; Moment du prélèvement: Fin de l'exposition, de la période de travail. Exposition de longue durée: après plusieurs périodes de travail.) / (364 nmol/l; Biologischer Parameter: Mangan; Untersuchungsmaterial: Vollblut; Probennahmezeitpunkt: Expositionsende, bzw. Schichtende. Bei Langzeitexposition: nach mehreren vorangegangenen Schichten.)
Remark	Interprétation quantitative difficile. / Quantitative Interpretation schwierig.
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	Manganese, elemental and inorganic compounds, as Mn
ACGIH OEL TWA	0,02 mg/m ³ (R - Respirable particulate matter) 0,1 mg/m ³ (I - Inhalable particulate matter)
Remark (ACGIH)	TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2022
nickel dinitrate (13138-45-9)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Nickel nitrate
IOEL TWA	0,005 mg/m ³ (respirable fraction) 0,01 mg/m ³ (inhalable fraction) 0,005 mg/m ³ (respirable fraction)
Remark	(Year of adoption 2011) (Year of adoption 2011)
Regulatory reference	SCOEL Recommendations SCOEL Recommendations

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nickel dinitrate (13138-45-9)	
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/m ³
MAK (OEL STEL)	2 mg/m ³
TRK (OEL TWA)	0,5 mg/m ³ (als Ni berechnet, E)
TRK (OEL STEL)	2 mg/m ³ (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. 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	Nickel (composés insolubles inorganiques) (en Ni) # Nikkel (onoplosbare anorganische verbindingen) (als Ni)
OEL TWA	0,1 mg/m ³ (Nickel (composés solubles) (en Ni); Belgium; Time-weighted average exposure limit 8 h)
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Никел
OEL TWA	0,05 mg/m ³ метал и съединения (като никел)
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. 47 от 2021 г., в сила от 04.06.2021 г.)
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

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nickel dinitrate (13138-45-9)	
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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Nikal
GVI (OEL TWA) [1]	0,5 mg/m ³
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 1/2021)
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 10 µg/l Karakteristični pokazatelj: nikal - Biološki uzorak: plazma - Vrijeme uzorkovanja: na kraju radne smjene 15,4 µmol/mol creatinine Karakteristični pokazatelj: nikal - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene 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/m ³
NPK-P (OEL C)	1 mg/m ³
Remark	B - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi, S - látka má senzibilizující účinek (s větou H317, H334), V - vdechovatelná frakce aerosolu.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Czech Republic - Biological limit values	
Local name	Nikl
BLV	0,04 mg/g creatinine Ukazatel: Nikl - Biologický vzorek: moči - Doba odběru: nerozhoduje 0,077 µmol/mmol Creatinine Ukazatel: Nikl - Biologický vzorek: moči - Doba odběru: nerozhoduje
Regulatory reference	Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Nikkel, pulver og støv
OEL TWA [1]	0,05 mg/m ³ beregnet som Ni
Remark	K (betyder, at stoffet anses for at kunne være kræftfremkaldende)
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Nikkel, metall
OEL TWA	0,5 mg/m ³
Remark	S (Sensibiliseeriv aine)

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nickel dinitrate (13138-45-9)	
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Nikkeli, metalli
HTP (OEL TWA) [1]	0,01 mg/m ³
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
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 terveystieteiden ministeriö)
France - Occupational Exposure Limits	
Local name	Nickel (métal)
VME (OEL TWA)	1 mg/m ³
Remark	Valeurs recommandées/admises; substance classée cancérogène de catégorie 2
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Nickel und Nickelverbindungen
AGW (OEL TWA) [1]	0,006 mg/m ³ A (mg/m ³)
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/m ³ (A)
Notes	b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000
Tolerance concentration (Weight conc.)	6 µg/m ³ (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.; (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) 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 - Occupational Exposure Limits	
Local name	Nickel

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nickel dinitrate (13138-45-9)	
OEL TWA [1]	0,5 mg/m ³
Remark	Sens. (In the workplace respiratory or dermal exposures to sensitising agents may occur. Sensitizers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The notation does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitizers 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))
Regulatory reference	Chemical Agents Code of Practice 2021
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)
Latvia - Occupational Exposure Limits	
Local name	Niķelis,niķeļlaoksīdi, sulfīdiunsavienojumu maisījumi(pēcNi)
OEL TWA	0,05 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
Latvia - Biological Exposure Indices	
Local name	Niķelim un tā neorganiskajiem savienojumiem
BEI	3 µg/l Niķelim urīnā
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2021. gada 18. februārī noteikumiem Nr. 110)
Lithuania - Occupational Exposure Limits	
Local name	Nikelis
IPRV (OEL TWA)	0,5 mg/m ³
Remark	K (kancerogeninis poveikis); J (jautrinantis 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/m ³
Portugal - Occupational Exposure Limits	
Local name	Níquel, expresso em Ni Elementar
OEL TWA	1,5 mg/m ³ 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/m ³
OEL STEL	0,5 mg/m ³

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nickel dinitrate (13138-45-9)	
Slovenia - Occupational Exposure Limits	
Local name	nikelj – kovina
OEL TWA	0,006 mg/m ³
OEL STEL	0,048 mg/m ³
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), 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. 72/2021 z dne 11.5.2021
Spain - Occupational Exposure Limits	
Local name	Níquel metal
VLA-ED (OEL TWA) [1]	1 mg/m ³
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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Nickel, metall
NGV (OEL TWA)	0,5 mg/m ³ totaldamm
Remark	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 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)
United Kingdom - Occupational Exposure Limits	
Local name	Nickel
WEL TWA (OEL TWA) [1]	0,1 mg/m ³ Nickel, water-soluble inorganic compounds (as Ni); United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
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

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nickel dinitrate (13138-45-9)	
OEL TWA	0,05 mg/m ³
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) [1]	0,05 mg/m ³ (i) / (e)
Critical toxicity	Cancnasal, Poumons / Nasenkrebs, Lunge
Notation	S, C1 _A , B / S, C1 _A , B
Remark	NIOSH
Regulatory reference	www.suva.ch, 28.03.2022
Switzerland - BAT	
Local name	Nickel, sels solubles / Nickelsalze, löslich
BAT	40 µg/l (681.4 nmol/l; Paramètre biologique: Nickel; 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.) / (681.4 nmol/l; Biologischer Parameter: Nickel; Untersuchungsmaterial: Urin; Probennahmezeitpunkt: Expositionsende, bzw. Schichtende. Bei Langzeitexposition: nach mehreren vorangegangenen Schichten.)
Remark	Paramètre non spécifique. / Nicht spezifischer Parameter.
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	Nickel, elemental
ACGIH OEL TWA	0,1 mg/m ³ (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 2022
lead nitrate (10099-74-8)	
EU - Binding Occupational Exposure Limit (BOEL)	
Local name	Inorganic lead and its compounds
BOEL TWA	0,15 mg/m ³
Regulatory reference	DIRECTIVE (EU) 2022/431 (amending Directive 2004/37/EC)
EU - Biological Limit Value (BLV)	
Local name	Lead and its inorganic compounds
BLV	30 µg/100ml Parameter: Pb
Regulatory reference	SCOEL List of recommended health-based BLVs and BGVs
Austria - Occupational Exposure Limits	
Local name	Blei und seine Verbindungen außer Bleiarsenat, Bleichromat, Bleichromatoxid und Alkylbleiverbindungen
MAK (OEL TWA)	0,1 mg/m ³
MAK (OEL STEL)	0,4 mg/m ³

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lead nitrate (10099-74-8)	
Remark	Fortpflanzungsgefährdend: F, D, L
Regulatory reference	BGBl. II Nr. 156/2021
Austria - Biological limit values	
Local name	Blei
BLV	10 g/dl Parameter: Hämoglobin - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Frauen 12 g/dl Parameter: Hämoglobin - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Männer 30 % Parameter: Hämatokrit - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Frauen 35 % Parameter: Hämatokrit - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Männer 120 µg/100ml Parameter: RCB (EPP) - Untersuchungsmaterial: Blut 30 µg/100ml Parameter: Blei - Untersuchungsmaterial: Blut 10 mg/l Parameter: ALA-U - Untersuchungsmaterial: Harn - Mitarbeiter/innen: Davis; Männer, Frauen > 50 a 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 Eignung mit vorzeitiger Folgeuntersuchung: Bei Überschreiten bzw. Unterschreiten der Grenzwerte im Blut oder im Harn. 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)
Belgium - Occupational Exposure Limits	
Local name	Plomb inorg. (poussières et fumées) (en Pb) # Lood, anorganisch, stof en rook, als Pb
OEL TWA	0,15 mg/m ³ (Plomb inorg. (poussières et fumées) (en Pb); Belgium; Time-weighted average exposure limit 8 h)
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Олово
OEL TWA	0,05 mg/m ³ и неорганични съединения
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. 47 от 2021 г., в сила от 04.06.2021 г.)
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 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)
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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Olovo i njegovi anorganski spojevi (kao Pb)*
GVI (OEL TWA) [1]	0,15 mg/m ³

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lead nitrate (10099-74-8)	
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 1/2021)
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 300 µg/l Karakteristični pokazatelj: olovo - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično - Napomena: žene <45 god 15 U/LE Karakteristični pokazatelj: dehidrataza δ – aminolevulinske kiseline - Biološki uzorak: krv - Vrijeme uzorkovanja: nije kritično 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) 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/m ³
NPK-P (OEL C)	0,2 mg/m ³
Remark	B - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi, T - toxický pro reprodukci kategorie 1A a 1B (s větou H360 včetně příslušných kódů). (4) Pro hodnocení expozice u olova je rozhodující výsledek vyšetření plumbémie.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Czech Republic - Biological limit values	
Local name	Olovo
BLV	15 mg/g creatinine Ukazatel: 5-Aminolevulová kyselina - Biologický vzorek: moči - Doba odběru: nerozhoduje 13 µmol/mmol Creatinine Ukazatel: 5-Aminolevulová kyselina - Biologický vzorek: moči - Doba odběru: nerozhoduje 0,2 mg/g creatinine Ukazatel: Koproporfyryl - Biologický vzorek: moči - Doba odběru: nerozhoduje 0,035 µmol/mmol Creatinine Ukazatel: Koproporfyryl - Biologický vzorek: moči - Doba odběru: nerozhoduje 0,4 mg/l Ukazatel: Olovo - Biologický 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.)
Denmark - Occupational Exposure Limits	
Local name	Bly, pulver, støv, røg og uorganiske forbindelser
OEL TWA [1]	0,05 mg/m ³ beregnet som Pb
Remark	E (betyder, at stoffet har en EF-grænseværdi)

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lead nitrate (10099-74-8)	
Regulatory reference	BEK nr 2203 af 29. november 2021
Denmark - Biological limit values	
Local name	Bly, pulver, støv, røg og uorganiske forbindelser
BLV	20 µg Pb/100 ml blood Den enkelttes blodniveau må ikke overskride værdien på bly
Regulatory reference	BEK nr 698 af 28/05/2020
Estonia - Occupational Exposure Limits	
Local name	Plii j aanorgaanilised ühendid, (arvutatudpliile) kogutolm
OEL TWA	0,1 mg/m ³
Remark	R (Reproduktiivtoksiline aine), 7 (Pliile on kehtestatud ka bioloogiline piirnorm), 1 (Peentolm koosneb alla 2,5-mikromeetrise läbimõõduga osakestest, mis võivad jõuda koos sissehingatava õhuga kopsu alveoolidesse (respireeritav fraksioon))
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Lyijy, metalli
HTP (OEL TWA) [1]	0,1 mg/m ³
Remark	Melu
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden tutkimuskeskus)
Finland - Biological limit values	
Local name	Lyijy, metalli
BLV	1,4 µmol/l Parametri: Veren lyijy - Näytteenottoajankohta: Vuorokaudenajalla ei merkitystä
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden tutkimuskeskus)
France - Occupational Exposure Limits	
VME (OEL TWA)	0,1 mg/m ³ (Plomb métallique et composés, en Pb; France; Time-weighted average exposure limit 8 h; VRC: Valeur réglementaire contraignante)
Germany - Biological limit values (TRGS 903)	
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
Gibraltar - Occupational Exposure Limits	
Local name	Inorganic lead and its compounds
OEL TWA	0,15 mg/m ³
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)
Greece - Occupational Exposure Limits	
Local name	Ανόργανος μόλυβδος και ενώσεις του
OEL TWA	0,15 mg/m ³
Regulatory reference	Π.Δ. 339/2001 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
Hungary - Occupational Exposure Limits	
Local name	ÓLOM és SZERVETLEN VEGYÜLETEI (Pb-ra számítva)
AK (OEL TWA)	0,15 mg/m ³

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lead nitrate (10099-74-8)	
Remark	i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat), BEM (biológiai expozíciós mutató), BHM (biológiai hatásmutató); 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	Ólom (szervetlen)
BEI	300 µg/l Biológiai expozíciós mutató: Ólom - Biológiai minta: vérben - Mintavétel ideje: n.k. (nem kritikus) - Érintettek köre: férfiak és 45 évnél idősebb nők 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 200 µg/l Biológiai expozíciós mutató: Ólom - Biológiai minta: vérben - Mintavétel ideje: n.k. (nem kritikus) - Érintettek köre: 45 évnél fiatalabb nők 1 µmol/l Biológiai expozíciós mutató: Ólom - Biológiai minta: vérben - Mintavétel ideje: n.k. (nem kritikus) - Érintettek köre: 45 évnél fiatalabb nők 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 vérérom koncentráció meghatározása kötelező 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 vérérom koncentráció meghatározása kötelező
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	Lead and its compounds (except tetraethyl lead)
OEL TWA [1]	0,15 mg/m ³
Remark	Repr.1A (Substances which are known human reproductive toxicants), BOELV (Binding Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2021
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	Health surveillance is carried out if: a. exposure to a concentration of lead in air is greater than 0.075mg/m ³ , 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	S.I. No. 619/2001 - Safety, Health and Welfare At Work (Chemical Agents) Regulations, 2001
Latvia - Occupational Exposure Limits	
Local name	Svinsuntāneorganiskie savienojumi,(pēcsvina)
OEL TWA	0,005 mg/m ³
OEL STEL	0,01 mg/m ³
Remark	letekme uz dzirdi
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2018. gada 10. jūlijā noteikumiem Nr. 407)

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lead nitrate (10099-74-8)	
Latvia - Biological Exposure Indices	
Local name	Svinam
BEI	30 µg/100ml Svinam asinīs (references lielums – svina koncentrācijai asinīs aroda neekspozētai populācijai ≤ 10 µg/100 mL). Atkārtota asins analīze tiek veikta pēc diviem mēnešiem, ja svina līmenis ir 30–60 µg/100 mL. Ja svina līmenis ir > 60 µg/100 mL, nepieciešama pārcelšana darbā, kur nav saskares ar svinu, veselības aprūpe un atkārtota Pb līmeņa kontrole 100 µg/g creatinine Koproporfirīns urīnā (references lielums 22-57 µg/g kreatinīna) 5 mg/g creatinine Aminolevulīnskābe urīnā (references lielums 0,5-2,5 mg/g kreatinīna)
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2021. gada 18. februārī noteikumiem Nr. 110)
Netherlands - Occupational Exposure Limits	
Local name	Lood
TGG-8u (OEL TWA)	0,15 mg/m ³ (en anorganische loodverbindingen)
Remark	(zie tevens artikel 4.19a Arbeidsomstandighedenregeling)
Regulatory reference	Arbeidsomstandighedenregeling 2022
Netherlands - Biological limit values	
Local name	Lood en anorganische loodverbindingen
BLV	70 µg/100ml Het loodgehalte in het bloed
Regulatory reference	Arbeidsomstandighedenregeling 2020
Poland - Occupational Exposure Limits	
Local name	Ołów i jego związki nieorganiczne w przeliczeniu na Pb
NDS (OEL TWA)	0,05 mg/m ³
Remark	Frakcja wdychalna – frakcja aerozolu wnikająca przez nos i usta, która po zdeponowaniu w drogach oddechowych stwarza zagrożenie dla zdrowia.
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Chumbo elementar e compostos inorgânicos , expressos em Pb
OEL TWA	0,05 mg/m ³
Remark	A3 (Agente carcinogénico confirmado nos animais de laboratorio con relevância desconhecida no Homem); IBE (Índice biológico de exposição)
Regulatory reference	Norma Portuguesa NP 1796:2014
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)

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lead nitrate (10099-74-8)	
OEL TWA	0,05 mg/m ³
OEL STEL	0,1 mg/m ³
Slovakia - Occupational Exposure Limits	
Local name	Olovo a jeho anorganické zlúčeniny (ako Pb)
NPHV (OEL TWA) [1]	0,15 mg/m ³ respirabilná frakcia 0,5 mg/m ³ inhalovateľná frakcia
Remark	Olovo je látka s kumulatívnymi a systémovými účinkami. Preto sa musí monitorovanie ovzdušia doplniť zdravotným dohľadom vrátane biologického monitorovania podľa § 12 a prílohy č. 2.
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Slovakia - Biological limit values	
Local name	Olovo a jeho zlúčeniny (okrem chrómanu olovnatého, chrómanu arzenitého a alkylovaných zlúčenín)
BLV	400 µg/l Zisťovaný faktor: Olovo - Vyšetrovaný materiál: krv - Čas odberu vzorky: a) žiadne obmedzenie 100 µg/l Zisťovaný faktor: Olovo - Vyšetrovaný materiál: krv - Čas odberu vzorky: a) žiadne obmedzenie - Poznámka: ženy < 45 r. 15 mg/l Zisťovaný faktor: delta-Aminolevulová kyselina - Vyšetrovaný materiál: moč - Čas odberu vzorky: a) žiadne obmedzenie 10,03 mg/g creatinine Zisťovaný faktor: delta-Aminolevulová kyselina - Vyšetrovaný materiál: moč - Čas odberu vzorky: a) žiadne obmedzenie 6 mg/l Zisťovaný faktor: delta-Aminolevulová kyselina - Poznámka: ženy < 45 r. 4,03 mg/g creatinine Zisťovaný faktor: delta-Aminolevulová kyselina - Poznámka: ženy < 45 r. 0,3 mg/l Zisťovaný faktor: Koproporfyrín - Vyšetrovaný materiál: moč - Čas odberu vzorky: a) žiadne obmedzenie 0,2 mg/g creatinine Zisťovaný faktor: Koproporfyrín - Vyšetrovaný materiál: moč - Čas odberu vzorky: a) žiadne obmedzenie
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (Zmena: 471/2011 Z.z.)
Slovenia - Occupational Exposure Limits	
Local name	svinec in njegove spojine (računano kot Pb) razen svinčevega arzenata, svinčevega kromata in alkilsvinčevih spojin
OEL TWA	0,1 mg/m ³
OEL STEL	0,4 mg/m ³
Remark	BAT (Biološka mejna vrednost), EU
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Slovenia - Biological limit values	
Local name	svinec
BLV	400 µg/l Parameter: svinec - Biološki vzorec: kri - Čas vzorčenja: ni pomembno - Opombe: moški 300 µg/l Parameter: svinec - Biološki vzorec: kri - Čas vzorčenja: ni pomembno - Opombe: ženske pod 45 let
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021
Spain - Occupational Exposure Limits	
Local name	Plomo
VLA-ED (OEL TWA) [1]	0,15 mg/m ³ elemental 0,15 mg/m ³ Compuestos inorgánicos de plomo, como Pb

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lead nitrate (10099-74-8)	
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 2022. 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 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Bly, och oorg. föreningar (som Pb)
NGV (OEL TWA)	0,05 mg/m ³ respirabelt damm 0,1 mg/m ³ 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 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 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) [1]	15 mg/cm ³ 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	Bly, duft, ryk, reykur, ólífræn sambönd, sem Pb
OEL TWA	0,05 mg/m ³
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 ³ (l) инхалабилна фракција – дел на вкупно суспендирани материи, кои работникот ги вдишува
KTV	4

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lead nitrate (10099-74-8)	
Short time value [mg/m ³]	0,4 mg/m ³
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 ³ или во ml/m ³ (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) [1]	0,1 mg/m ³
KZGW (OEL STEL)	0,8 mg/m ³
Critical toxicity	Sang, SN / Blut, NS
Notation	C2, R1 _{AD} , R2 _F , SS _B , B / C2, R1 _{AD} , R2 _F , SS _B , B
Remark	e(mg/m ³) - B C2 R2 _F R1 _{AD} SS _B - NS, Blut - HSE, NIOSH
Regulatory reference	www.suva.ch, 28.03.2022
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.) 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 ³
Remark (ACGIH)	TLV® Basis: CNS & PNS impair; hematologic eff. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEI
Regulatory reference	ACGIH 2022

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selenious acid (7783-00-8)	
Austria - Occupational Exposure Limits	
Local name	Selen und seine Verbindungen (außer Selenwasserstoff)
MAK (OEL TWA)	0,1 mg/m ³
MAK (OEL STEL)	0,3 mg/m ³
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/m ³ (Sélénium et ses composés (en Se); Belgium; Time-weighted average exposure limit 8 h)
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Селен
OEL TWA	0,2 mg/m ³ 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. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Selen
GVI (OEL TWA) [1]	0,1 mg/m ³
Remark	T (otrovno)
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граниčnim vrijednostima izloženosti i biološkim граниčnim vrijednostima (NN 1/2021)
Czech Republic - Occupational Exposure Limits	
Local name	Selen
PEL (OEL TWA)	0,1 mg/m ³
NPK-P (OEL C)	0,2 mg/m ³
Remark	D - při expozici se významně uplatňuje pronikání faktoru kůží.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Selen og forbindelser
OEL TWA [1]	0,1 mg/m ³ beregnet som Se, se dog hydrogenselenid og selenhexafluorid
Regulatory reference	BEK nr 1054 af 28/06/2022
Estonia - Occupational Exposure Limits	
Local name	Seleen, anorgaanilisedühendid, v.a vesinikseleniid (arvutatudseleenile)
OEL TWA	0,1 mg/m ³
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Seleeni
HTP (OEL TWA) [1]	0,1 mg/m ³
HTP (OEL STEL)	0,3 mg/m ³

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selenious acid (7783-00-8)	
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Selen
AGW (OEL TWA) [1]	0,05 mg/m ³ E (mg/m ³)
Peak exposure limitation factor	1(II)
Remark	DFG,Y
Regulatory reference	TRGS900
Germany - Biological limit values (TRGS 903)	
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
Ireland - Occupational Exposure Limits	
Local name	Selenium and compounds, except hydrogen selenide (as Se)
OEL TWA [1]	0,1 mg/m ³
Regulatory reference	Chemical Agents Code of Practice 2021
Poland - Occupational Exposure Limits	
Local name	Selen i jego związki, z wyjątkiem selenanu w przeliczeniu na Se
NDS (OEL TWA)	0,1 mg/m ³
NDSch (OEL STEL)	0,3 mg/m ³
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Selénio e compostos, expressos em Se
OEL TWA	0,2 mg/m ³
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Seleniu și compuși exprimați în Se
OEL TWA	0,1 mg/m ³
OEL STEL	0,2 mg/m ³
Slovakia - Occupational Exposure Limits	
Local name	Selén a jeho anorganické zlúčeniny (ako Se)
NPHV (OEL TWA) [1]	0,1 mg/m ³
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	selen in njegove spojine
OEL TWA	0,1 mg/m ³
OEL STEL	0,05 mg/m ³
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti)
Regulatory reference	Uradni list RS, št. 72/2021 z dne 11.5.2021

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selenious acid (7783-00-8)	
Spain - Occupational Exposure Limits	
Local name	Selenio
VLA-ED (OEL TWA) [1]	0,1 mg/m ³ elemental 0,1 mg/m ³ Compuestos de Selenio, como Se (excepto el Seleniuro de hidrógeno)
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Selen, och oorg. föreningar (som Se) utom väteselenid
NGV (OEL TWA)	0,1 mg/m ³ 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. 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)
United Kingdom - Occupational Exposure Limits	
Local name	Selenium
WEL TWA (OEL TWA) [1]	0,1 mg/m ³ 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 ³
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 ³ (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 - Occupational Exposure Limits	
Local name	Selen und seine anorganischen Verb. (als Se berechnet)
MAK (OEL TWA) [1]	0,02 mg/m ³
KZGW (OEL STEL)	0,16 mg/m ³
Critical toxicity	VRS, Yeux, Diabetes / OAW, Auge, Diabetes
Notation	R, SS _C , B / H, SS _C , B
Remark	e(mg/m ³) - H B SSC - Auge & OAW, Diabetes ^{KT HU} - OSHA
Regulatory reference	www.suva.ch, 01.01.2023
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.)

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selenious acid (7783-00-8)	
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
ACGIH OEL TWA	0,2 mg/m ³
Remark (ACGIH)	TLV® Basis: Eye & URT irr
Regulatory reference	ACGIH 2023
strontium nitrate (10042-76-9)	
Lithuania - Occupational Exposure Limits	
Local name	Stroncio nitratas
IPRV (OEL TWA)	1 mg/m ³
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
thallium nitrate (10102-45-1)	
Austria - Occupational Exposure Limits	
Local name	Thalliumverbindungen lösliche
MAK (OEL TWA)	0,1 mg/m ³ (als TI berechnet, E)
MAK (OEL STEL)	1 mg/m ³ (als TI berechnet, E, 1x 30(Miw) min)
Regulatory reference	BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Thallium (et composés) (en TI) # Thallium (en verbindingen) (als TI)
OEL TWA	0,02 mg/m ³
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. # D: 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 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Талий
OEL TWA	0,05 mg/m ³ и неговите съединения (като талий)
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. 47 от 2021 г., в сила от 04.06.2021 г.)
Czech Republic - Occupational Exposure Limits	
Local name	Thallium
PEL (OEL TWA)	0,1 mg/m ³
NPK-P (OEL C)	0,5 mg/m ³
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Thalliumforbindelser, opløselige

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thallium nitrate (10102-45-1)	
OEL TWA [1]	0,1 mg/m ³ beregnet som TI
Remark	H (betyder, at stoffet kan optages gennem huden)
Regulatory reference	BEK nr 1054 af 28/06/2022
Finland - Occupational Exposure Limits	
Local name	Tallium
HTP (OEL TWA) [1]	0,1 mg/m ³
Remark	lho
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
France - Occupational Exposure Limits	
Local name	Thallium
VME (OEL TWA)	0,1 mg/m ³
Remark	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
Ireland - Occupational Exposure Limits	
Local name	Thallium and compounds (as TI)
OEL TWA [1]	0,02 mg/m ³
Remark	Sk (Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body)
Regulatory reference	Chemical Agents Code of Practice 2021
Poland - Occupational Exposure Limits	
Local name	Tal i jego związki w przeliczeniu na TI
NDS (OEL TWA)	0,1 mg/m ³
NDSCh (OEL STEL)	0,3 mg/m ³
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Tálio, e compostos solúveis, expressos em TI
OEL TWA	0,02 mg/m ³ I (Fração inalável)
Remark	P (Toxicidade percutânea)
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Thaliu (compuși solubili)
OEL STEL	0,05 mg/m ³
Slovakia - Occupational Exposure Limits	
Local name	Tálium a jeho rozpustné zlúčeniny (ako TI)
NPHV (OEL TWA) [1]	0,1 mg/m ³
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.)
Spain - Occupational Exposure Limits	
Local name	Talio
VLA-ED (OEL TWA) [1]	0,1 mg/m ³ elemental 0,1 mg/m ³ Compuestos solubles de talio, como TI

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thallium nitrate (10102-45-1)	
Remark	Vía dérmica (Indica que, en las exposiciones a esta sustancia, la aportación por la vía cutánea puede resultar significativa para el contenido corporal total si no se adoptan medidas para prevenir la absorción. En estas situaciones, es aconsejable la utilización del control biológico para poder cuantificar la cantidad global absorbida del contaminante. Para más información véase el Apartado 5 de este documento), c (Los términos "soluble" e "insoluble" se entienden con referencia al agua).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
United Kingdom - Occupational Exposure Limits	
Local name	Thallium
WEL TWA (OEL TWA) [1]	0,1 mg/m ³ soluble compounds (as TI)
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)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Þallíumsambönd, uppleysanleg, sem TI
OEL TWA	0,1 mg/m ³
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	Thallium og løselige thalliumforb. (beregnet som TI)
Grenseverdi (OEL TWA) [1]	0,1 mg/m ³
Remark	H: Kjemikalier som kan tas opp gjennom huden.
Regulatory reference	FOR-2021-06-28-2248
Switzerland - Occupational Exposure Limits	
Local name	Thallium, composés solubles / Thalliumverbindungen, löslich
MAK (OEL TWA) [1]	0,1 mg/m ³ (i) / (e)
Critical toxicity	TGI, SNP / GIT, PNS
Notation	R / H
Remark	NIOSH, OSHA
Regulatory reference	www.suva.ch, 01.01.2023
USA - ACGIH - Occupational Exposure Limits	
Local name	Thallium and compounds, as TI
ACGIH OEL TWA	0,02 mg/m ³ (I - Inhalable particulate matter)
Remark (ACGIH)	TLV® Basis: GI dam; peripheral neuropathy. Notations: Skin
Regulatory reference	ACGIH 2023
uranyl acetate dihydrate (6159-44-0)	
Belgium - Occupational Exposure Limits	
Local name	Uranium (état naturel et composés de l') (en U) # Uraan (natuurlijk en - verbindingen) (als U)
OEL TWA	0,2 mg/m ³
OEL STEL	0,6 mg/m ³

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uranyl acetate dihydrate (6159-44-0)	
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Уран
OEL TWA	0,2 mg/m ³ неразтворими съединения (като уран) 0,05 mg/m ³ разтворими съединения (като уран)
OEL STEL	0,6 mg/m ³ неразтворими съединения (като уран)
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. 47 от 2021 г., в сила от 04.06.2021 г.)
Denmark - Occupational Exposure Limits	
Local name	Uranforbindelser
OEL TWA [1]	0,2 mg/m ³ beregnet som U
Regulatory reference	BEK nr 1054 af 28/06/2022
Estonia - Occupational Exposure Limits	
Local name	Uraani ühendid (arvutatuduraanile)
OEL TWA	0,2 mg/m ³
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Uraani ja sen yhdisteet, liukenemattomat
HTP (OEL TWA) [1]	0,2 mg/m ³ 0,05 mg/m ³
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
Ireland - Occupational Exposure Limits	
Local name	Uranium compounds, natural, soluble, (as U)
OEL TWA [1]	0,2 mg/m ³
OEL STEL	0,6 mg/m ³
Regulatory reference	Chemical Agents Code of Practice 2021
Ireland - Biological limit values	
Local name	Fluorine, Hydrogen Fluoride and Inorganic Fluorides (not uranium hexafluoride)
BMGV	2 mg/l Parameter: Fluoride - Medium: urine - Sampling time: Prior to shift - Notations: B (Background), Ns (Non-specific) 3 mg/l Parameter: Fluoride - Medium: urine - Sampling time: End of shift - Notations: B (Background), Ns (Non-specific)
Regulatory reference	Biological Monitoring Guidelines (HSA, 2011)
Latvia - Occupational Exposure Limits	
Local name	Urāns
OEL TWA	0,075 mg/m ³ nešķīstošie savienojumi 0,015 mg/m ³ šķīstošie savienojumi
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
Poland - Occupational Exposure Limits	
Local name	Uran i jego związki

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uranyl acetate dihydrate (6159-44-0)	
NDS (OEL TWA)	0,075 mg/m ³ w przeliczeniu na U: związki nierozpuszczalne 0,015 mg/m ³ w przeliczeniu na U: związki rozpuszczalne
NDSch (OEL STEL)	0,6 mg/m ³ w przeliczeniu na U: związki nierozpuszczalne 0,12 mg/m ³ w przeliczeniu na U: związki rozpuszczalne
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Urânio (natural) Compostos solúveis e insolúveis, expressos em U
OEL TWA	0,2 mg/m ³
OEL STEL	0,6 mg/m ³
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	Urânio
BEI	200 µg/l Parâmetro: Urânio - Meio: urina - Momento da amostragem: Fim do turno
Regulatory reference	Norma Portuguesa NP 1796:2014
Spain - Occupational Exposure Limits	
Local name	Uranio
VLA-ED (OEL TWA) [1]	0,2 mg/m ³ natural 0,2 mg/m ³ Compuestos solubles e insolubles de uranio, como U
VLA-EC (OEL STEL)	0,6 mg/m ³ natural 0,6 mg/m ³ Compuestos solubles e insolubles de uranio, como U
Remark	c (Los términos "soluble" e "insoluble" se entienden con referencia al agua).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
Iceland - Occupational Exposure Limits	
Local name	Úransambönd, sem U
OEL TWA	0,2 mg/m ³
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Switzerland - Occupational Exposure Limits	
Local name	Uran und seine Verbindungen (als U berechnet)
MAK (OEL TWA) [1]	0,2 mg/m ³
Critical toxicity	Rein / Niere
Notation	R / H
Remark	e(mg/m ³) - H - Niere - OSHA, s. auch Strahlenschutzverordnung
Regulatory reference	www.suva.ch, 01.01.2023
USA - ACGIH - Occupational Exposure Limits	
Local name	Uranium (natural), soluble and insoluble compounds, as U
ACGIH OEL TWA	0,2 mg/m ³
ACGIH OEL STEL	0,6 mg/m ³
Remark (ACGIH)	TLV® Basis: Kidney dam. Notations: A1 (Confirmed Human Carcinogen); BEI
Regulatory reference	ACGIH 2023

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uranyl acetate dihydrate (6159-44-0)	
USA - ACGIH - Biological Exposure Indices	
Local name	URANIUM
BEI	200 µg/l Parameter: Uranium - Medium: urine - Sampling time: End of shift
Regulatory reference	ACGIH 2019
ammonium metavanadate (7803-55-6)	
Austria - Occupational Exposure Limits	
Local name	Vanadium
MAK (OEL TWA)	0,5 mg/m ³
MAK (OEL STEL)	1 mg/m ³
Regulatory reference	BGBI. II Nr. 156/2021
Czech Republic - Occupational Exposure Limits	
Local name	Vanad (prach)
PEL (OEL TWA)	0,05 mg/m ³
NPK-P (OEL C)	0,15 mg/m ³
Remark	V - vdechovatelná frakce aerosolu.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Latvia - Occupational Exposure Limits	
Local name	Vanādijsuntā savienojumi (ferrovanādijs(pēc vanādijs))
OEL TWA	1 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2011. gada 1. februārī noteikumiem Nr. 92)
Netherlands - Occupational Exposure Limits	
Local name	Vanadiumoxiden
TGG-8u (OEL TWA)	0,01 mg/m ³ (als V)
TGG-15min (OEL STEL)	0,03 mg/m ³ (als V)
Regulatory reference	Arbeidsomstandighedenregeling 2022
Slovenia - Occupational Exposure Limits	
Local name	vanadij
OEL TWA	0,5 mg/m ³
OEL TWA [ppm]	0,03 ppm
OEL STEL	0,005 mg/m ³
OEL STEL [ppm]	0,03 ppm
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), 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. 72/2021 z dne 11.5.2021
Norway - Occupational Exposure Limits	
Local name	Vanadium
Grenseverdi (OEL TWA) [1]	0,05 mg/m ³ Røyk beregnet som V) 0,2 mg/m ³ Støv (beregnet som V)

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ammonium metavanadate (7803-55-6)	
Takverdi (OEL C) [1]	0,05 mg/m ³ Røyk (beregnet som V)
Regulatory reference	FOR-2021-06-28-2248

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

8.2.2. 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):



8.2.2.1. Eye and face protection

Eye protection:

Safety glasses

8.2.2.2. Skin protection

Skin and body protection:

Wear suitable protective clothing

Hand protection:

Protective gloves

8.2.2.3. Respiratory protection

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Colour : Not available

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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	: 1,09
Relative vapour density at 20°C	: Not available
Particle characteristics	: Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

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.

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

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nitric acid (7697-37-2)	
LC50 Inhalation - Rat	> 2,65 mg/L air
silver nitrate (7761-88-8)	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rat	> 2000 mg/kg
aluminium nitrate (13473-90-0)	
LD50 oral rat	> 2000 mg/kg
LD50 oral	2261 mg/kg bodyweight mouse
LD50 dermal rabbit	> 5000 mg/kg
arsenic acid (7778-39-4)	
LD50 oral	149,6 mg/kg bodyweight (mouse)
LD50 dermal rabbit	2000 (1583 – 2417) mg/kg
barium nitrate (10022-31-8)	
LD50 oral rat	300 (50 – 300) mg/kg
LD50 dermal rat	> 2000 mg/kg bodyweight
LC50 Inhalation - Rat	> 1 mg/l/4h
LC50 Inhalation - Rat (Dust/Mist)	> 1,1 mg/l
cadmium nitrate (10325-94-7)	
LD50 oral rat	300 mg/kg bodyweight
LD50 oral	60,2 mg/kg bodyweight mouse
cobalt dinitrate (10141-05-6)	
LD50 oral rat	691 mg/kg
LD50 dermal rat	> 2000 mg/kg bodyweight
chromium trinitrate (13548-38-4)	
LD50 oral rat	900 – 3010 mg/kg
LC50 Inhalation - Rat	< 4,58 mg/L air
copper dinitrate (3251-23-8)	
LD50 oral rat	794 mg/kg
iron trinitrate (10421-48-4)	
LD50 oral rat	> 2000 mg/kg bodyweight
LD50 dermal rat	> 2000 mg/kg bodyweight
LC50 Inhalation - Rat	> 2000 mg/kg
mercury nitrate (10045-94-0)	
LD50 oral rat	26 mg/kg
LD50 dermal rat	75 mg/kg
potassium nitrate (7757-79-1)	
LD50 oral rat	> 2000 mg/kg bodyweight
LD50 dermal rat	> 5000 mg/kg bodyweight

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potassium nitrate (7757-79-1)	
LC50 Inhalation - Rat	> 0,527 mg/L air
lithium nitrate (7790-69-4)	
LD50 oral rat	1426 mg/kg
LD50 dermal rat	> 2000 mg/kg bodyweight
LC50 Inhalation - Rat	> 5,93 mg/l/4h
manganese dinitrate (10377-66-9)	
LD50 oral rat	> 300 mg/kg bodyweight
nickel dinitrate (13138-45-9)	
LD50 oral rat	361,9 mg/kg bodyweight
LC50 Inhalation - Rat (Dust/Mist)	2,48 mg/l
lead nitrate (10099-74-8)	
LD50 oral rat	4665 mg/kg
LD50 dermal rat	> 2000 mg/kg
LC50 Inhalation - Rat	> 5,05 mg/L air
selenious acid (7783-00-8)	
LD50 oral rat	68,1 mg/kg
strontium nitrate (10042-76-9)	
LD50 oral rat	> 2000 mg/kg
LC50 Inhalation - Rat	4,5 mg/l/4h
thallium nitrate (10102-45-1)	
LD50 oral rat	15 mg/kg
uranyl acetate dihydrate (6159-44-0)	
LD50 oral rat	204 mg/kg
ammonium metavanadate (7803-55-6)	
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
Skin corrosion/irritation : Causes severe skin burns.	
nitric acid (7697-37-2)	
pH	< 1
aluminium nitrate (13473-90-0)	
pH	2 – 4
barium nitrate (10022-31-8)	
pH	5 – 8
cobalt dinitrate (10141-05-6)	
pH	4

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chromium trinitrate (13548-38-4)	
pH	2 – 3
copper dinitrate (3251-23-8)	
pH	< 2
iron trinitrate (10421-48-4)	
pH	1,3
potassium nitrate (7757-79-1)	
pH	≈ 7
manganese dinitrate (10377-66-9)	
pH	< 2
nickel dinitrate (13138-45-9)	
pH	3,5 – 5,5 (5 %)
lead nitrate (10099-74-8)	
pH	3 – 4 (20 %)
selenious acid (7783-00-8)	
pH	1,5 (20 °C) 50 g/L
Serious eye damage/irritation : Causes serious eye damage.	
nitric acid (7697-37-2)	
pH	< 1
aluminium nitrate (13473-90-0)	
pH	2 – 4
barium nitrate (10022-31-8)	
pH	5 – 8
cobalt dinitrate (10141-05-6)	
pH	4
chromium trinitrate (13548-38-4)	
pH	2 – 3
copper dinitrate (3251-23-8)	
pH	< 2
iron trinitrate (10421-48-4)	
pH	1,3
potassium nitrate (7757-79-1)	
pH	≈ 7
manganese dinitrate (10377-66-9)	
pH	< 2
nickel dinitrate (13138-45-9)	
pH	3,5 – 5,5 (5 %)

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lead nitrate (10099-74-8)	
pH	3 – 4 (20 %)
selenious acid (7783-00-8)	
pH	1,5 (20 °C) 50 g/L
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
arsenic acid (7778-39-4)	
IARC group	2B - Possibly carcinogenic to humans
beryllium nitrate (13597-99-4)	
IARC group	1 - Carcinogenic to humans
cadmium nitrate (10325-94-7)	
IARC group	1 - Carcinogenic to humans
cobalt dinitrate (10141-05-6)	
IARC group	2B - Possibly carcinogenic to humans
chromium trinitrate (13548-38-4)	
IARC group	3 - Not classifiable
mercury nitrate (10045-94-0)	
IARC group	3 - Not classifiable
lead nitrate (10099-74-8)	
IARC group	2A - Probably carcinogenic to humans
selenious acid (7783-00-8)	
IARC group	3 - Not classifiable
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
beryllium nitrate (13597-99-4)	
STOT-single exposure	May cause respiratory irritation.
STOT-repeated exposure	: Not classified
nitric acid (7697-37-2)	
NOAEL (oral, rat, 90 days)	1500 mg/kg bodyweight
NOAEC (inhalation, rat, gas, 90 days)	2,15 ppm
silver nitrate (7761-88-8)	
LOAEL (oral, rat, 90 days)	125 mg/kg bodyweight
beryllium nitrate (13597-99-4)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
cadmium nitrate (10325-94-7)	
STOT-repeated exposure	Causes damage to organs (bone, kidneys, lungs) through prolonged or repeated exposure.

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cobalt dinitrate (10141-05-6)	
LOAEC (inhalation, rat,dust/mist/fume, 90 days)	0,31 mg/L air
NOAEL (oral, rat, 90 days)	3 mg/kg bodyweight
mercury nitrate (10045-94-0)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
potassium nitrate (7757-79-1)	
NOAEL (oral, rat, 90 days)	≥ 1500 mg/kg bodyweight
manganese dinitrate (10377-66-9)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
nickel dinitrate (13138-45-9)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
lead nitrate (10099-74-8)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
selenious acid (7783-00-8)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
strontium nitrate (10042-76-9)	
LOAEL (oral, rat, 90 days)	49,6 mg/kg bodyweight
NOAEL (oral, rat, 90 days)	12,4 mg/kg bodyweight
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
thallium nitrate (10102-45-1)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
uranyl acetate dihydrate (6159-44-0)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
ammonium metavanadate (7803-55-6)	
NOAEL (oral, rat, 90 days)	1,6 mg/kg bodyweight
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard	: Not classified
nitric acid (7697-37-2)	
Viscosity, kinematic	0,595 mm ² /s
aluminium nitrate (13473-90-0)	
Viscosity, kinematic	0,778 mm ² /s
ammonium metavanadate (7803-55-6)	
Viscosity, kinematic	Not applicable

11.2. Information on other hazards

No additional information available

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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

nitric acid (7697-37-2)	
EC50 - Crustacea [1]	180 mg/l Daphnia magna (Water flea)
Threshold limit - Algae [1]	> 19 mg/l

silver nitrate (7761-88-8)	
LC50 - Fish [1]	1,5 µg/l (Silver (Ag)) Pimephales promelas (Fathead minnow)
EC50 - Crustacea [1]	0,22 µg/l Silver (Ag) Daphnia magna (Water flea)

aluminium nitrate (13473-90-0)	
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)

arsenic acid (7778-39-4)	
LC50 - Fish [1]	28 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	3,26 mg/l Daphnia magna (Water flea)
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)

barium nitrate (10022-31-8)	
LC50 - Fish [1]	> 3,5 mg/l Brachydanio rerio (zebra-fish)
EC50 - Crustacea [1]	16 – 18 mg/l Ceriodaphnia dubia
EC50 72h - Algae [1]	> 1,15 mg/l Pseudokirchneriella subcapitata
NOEC (chronic)	2,9 mg/l Daphnia magna (Water flea)

beryllium nitrate (13597-99-4)	
LC50 - Fish [1]	8 mg/l
EC50 - Crustacea [1]	18 mg/l (24h)

cadmium nitrate (10325-94-7)	
LC50 - Fish [1]	34 µg/l Salmo Salar
EC50 - Crustacea [1]	0,04 mg/l Daphnia magna (Water flea)

cobalt dinitrate (10141-05-6)	
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)

chromium trinitrate (13548-38-4)	
LC50 - Fish [1]	20,1 mg/l Oncorhynchus mykiss (Rainbow trout)

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chromium trinitrate (13548-38-4)	
EC50 96h - Algae [1]	0,4 mg/l <i>Scenedesmus capricornutum</i>
EC50 96h - Algae [2]	1,21 mg/l <i>Scenedesmus capricornutum</i>
copper dinitrate (3251-23-8)	
LC50 - Fish [1]	68 – 94 µg/l <i>Oncorhynchus mykiss</i> (Rainbow trout)
EC50 - Crustacea [1]	0,0338 – 0,792 mg/l <i>Daphnia magna</i> (Water flea)
EC50 72h - Algae [1]	18 – 46 µg/L <i>Pseudokirchneriella subcapitata</i>
iron trinitrate (10421-48-4)	
LC50 - Fish [1]	0,88 mg/l (mg Fe / L) <i>Salvelinus fontinalis</i>
EC50 - Crustacea [1]	> 18 mg/l <i>Daphnia magna</i> (Water flea)
LOEC (chronic)	13 mg/l <i>Daphnia magna</i> (Water flea)
NOEC (chronic)	8,1 mg/l <i>Daphnia magna</i> (Water flea)
mercury nitrate (10045-94-0)	
EC50 - Crustacea [1]	0,0052 mg/l <i>Daphnia magna</i> (Water flea)
potassium nitrate (7757-79-1)	
LC50 - Fish [1]	1378 mg/l <i>Poecilia reticulata</i> (Guppy)
EC50 - Crustacea [1]	490 mg/l <i>Daphnia magna</i> (Water flea)
lithium nitrate (7790-69-4)	
LC50 - Fish [1]	158 mg/l <i>Oncorhynchus mykiss</i> (Rainbow trout)
EC50 - Crustacea [1]	249 mg/l <i>Daphnia magna</i> (Water flea)
LOEC (chronic)	2,53 mg/l <i>Daphnia magna</i> (Water flea)
NOEC (chronic)	1,7 mg/l <i>Daphnia magna</i> (Water flea)
manganese dinitrate (10377-66-9)	
LC50 - Fish [1]	55,26 – 67,71 mg/l (<i>Catla catla</i> ; <i>Labeo rohita</i> ; <i>Cirrhina mrigala</i>)
EC50 - Crustacea [1]	> 100 mg/l <i>Daphnia magna</i> (Water flea)
EC50 72h - Algae [1]	61 mg/l <i>Desmodesmus subspicatus</i>
nickel dinitrate (13138-45-9)	
LC50 - Fish [1]	0,4 mg/l (mg Ni/L) <i>Pimephales promelas</i> (Fathead minnow)
EC50 - Crustacea [1]	0,013 mg/l (mg Ni/L) <i>Ceriodaphnia dubia</i>
lead nitrate (10099-74-8)	
LC50 - Fish [1]	40,8 – 3597,9 µg/l (µg Pb/L) <i>Pimephales promelas</i> (Fathead minnow)
EC50 - Crustacea [1]	26,4 µg/l (µg Pb/L) <i>Ceriodaphnia dubia</i>
selenious acid (7783-00-8)	
LC50 - Fish [1]	2060 µg/l <i>Pimephales promelas</i> (Fathead minnow)
EC50 - Crustacea [1]	0,43 mg/l <i>Daphnia magna</i> (Water flea)
strontium nitrate (10042-76-9)	
LC50 - Fish [1]	> 97,45 mg/l <i>Cyprinus carpio</i> (Common carp)
EC50 - Crustacea [1]	125 mg/l <i>Daphnia magna</i> (Water flea)(mg Sr/L)

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strontium nitrate (10042-76-9)	
EC50 72h - Algae [1]	> 43,3 mg/l <i>Pseudokirchneriella subcapitata</i>
NOEC chronic fish	≥ 100 mg/l <i>Brachydanio rerio</i> (zebra-fish)
thallium nitrate (10102-45-1)	
LC50 - Fish [1]	180 mg/l
EC50 - Crustacea [1]	1,6 mg/l
ammonium metavanadate (7803-55-6)	
LC50 - Fish [1]	693 µg/l <i>Leuciscus idus</i> (golden orfe)
EC50 - Crustacea [1]	1,52 mg/l <i>Daphnia magna</i> (Water flea)
12.2. Persistence and degradability	
ammonium metavanadate (7803-55-6)	
Persistence and degradability	Adsorbs into the soil.
12.3. Bioaccumulative potential	
nitric acid (7697-37-2)	
Partition coefficient n-octanol/water (Log Pow)	-2,3
silver nitrate (7761-88-8)	
Partition coefficient n-octanol/water (Log Pow)	0,19 (estimated value)
aluminium nitrate (13473-90-0)	
Bioaccumulative potential	Not bioaccumulative.
arsenic acid (7778-39-4)	
Bioaccumulative potential	bioaccumulable.
barium nitrate (10022-31-8)	
Bioaccumulative potential	Not bioaccumulative.
beryllium nitrate (13597-99-4)	
Bioaccumulative potential	Not bioaccumulative.
cadmium nitrate (10325-94-7)	
Bioaccumulative potential	bioaccumulable.
iron trinitrate (10421-48-4)	
Bioaccumulative potential	Not bioaccumulative.
mercury nitrate (10045-94-0)	
Bioaccumulative potential	bioaccumulable.
lithium nitrate (7790-69-4)	
Partition coefficient n-octanol/water (Log Pow)	-0,79
lead nitrate (10099-74-8)	
Bioaccumulative potential	bioaccumulable.

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selenious acid (7783-00-8)

Bioaccumulative potential	bioaccumulable.
---------------------------	-----------------

thallium nitrate (10102-45-1)

Partition coefficient n-octanol/water (Log Pow)	0,21
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12.4. Mobility in soil

lithium nitrate (7790-69-4)

Mobility in soil	13,22
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12.5. Results of PBT and vPvB assessment

Component	
nitric acid (7697-37-2)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
silver nitrate (7761-88-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
aluminium nitrate (13473-90-0)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
arsenic acid (7778-39-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
barium nitrate (10022-31-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
beryllium nitrate (13597-99-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
cadmium nitrate (10325-94-7)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
cobalt dinitrate (10141-05-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
chromium trinitrate (13548-38-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
copper dinitrate (3251-23-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
iron trinitrate (10421-48-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
mercury nitrate (10045-94-0)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
potassium nitrate (7757-79-1)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
lithium nitrate (7790-69-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
manganese dinitrate (10377-66-9)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
nickel dinitrate (13138-45-9)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
lead nitrate (10099-74-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
selenious acid (7783-00-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

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Component	
strontium nitrate (10042-76-9)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
thallium nitrate (10102-45-1)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
uranyl acetate dihydrate (6159-44-0)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
ammonium metavanadate (7803-55-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

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

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 3264	UN 3264	UN 3264	UN 3264	UN 3264
14.2. UN proper shipping name				
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)
Transport document description				
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
14.3. Transport hazard class(es)				
8	8	8	8	8
				
14.4. Packing group				
II	II	II	II	II

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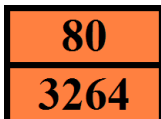
according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

ADR	IMDG	IATA	ADN	RID
14.5. Environmental hazards				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No	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
Excepted quantities (IMDG)	: E2
Packing instructions (IMDG)	: P001
IBC packing instructions (IMDG)	: IBC02
Tank instructions (IMDG)	: T11
Tank special provisions (IMDG)	: TP2, TP27
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-B
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

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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

SECTION 15: Regulatory information

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

15.1.1. 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
23.	cadmium nitrate	Cadmium 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)	Multi-element calibration standard 2A for ICP MS, 28 components ; 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
30.	cobalt dinitrate ; nickel dinitrate	Substances which are classified as reproductive toxicant category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 5 or Appendix 6, respectively.
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: Arsenic acid (EC 231-901-9, CAS 7778-39-4), Cobalt(II) dinitrate (EC 233-402-1, CAS 10141-05-6), Lead dinitrate (EC 233-245-9, CAS 10099-74-8)

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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), cadmium nitrate (10325-94-7), mercury dinitrate (10045-94-0), lead dinitrate (10099-74-8)

POP Regulation (Persistent Organic Pollutants)

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

Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

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 shall not 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 to the relevant national contact point 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

ANNEX II REPORTABLE EXPLOSIVES PRECURSORS

List of substances on their own or in mixtures or in substances for which suspicious transactions and significant disappearances and thefts are to be reported to the relevant national contact point within 24 hours.

Name	CAS-No.	Combined Nomenclature code (CN)	Combined Nomenclature code for mixture without constituents which would determine classification under another CN code
Potassium nitrate	7757-79-1	2834 21 00	ex 3824 99 96

Please see https://home-affairs.ec.europa.eu/policies/internal-security/counter-terrorism-and-radicalisation/protection/legislation-chemicals-used-home-made-explosives_en

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)

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15.1.2. 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

Germany

Water hazard class (WGK)

: WGK 1, Slightly hazardous to water (Classification according to AwSV, Annex 1).

Storage class (LGK, TRGS 510)

: LGK 8B - Non-combustible corrosive substances.

Joint storage 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

Joint storage not permitted for

: LGK 1, LGK 5.1A, LGK 5.2, LGK 6.2, LGK 7.

Joint storage with restrictions permitted for

: LGK 4.1A, LGK 4.2, LGK 4.3, LGK 5.1C.

Joint storage permitted for

: LGK 2A, LGK 2B, LGK 3, LGK 4.1B, LGK 5.1B, 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.

Hazardous Incident Ordinance (12. BImSchV)

: Is not subject of 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

: cadmium nitrate, cobalt dinitrate, lithium nitrate, nickel dinitrate, ammonium metavanadate are listed

SZW-lijst van mutagene stoffen

: cadmium nitrate, lithium nitrate, ammonium metavanadate are listed

SZW-lijst van reprotoxische stoffen – Borstvoeding

: nickel dinitrate is listed

SZW-lijst van reprotoxische stoffen –

: cobalt dinitrate, manganese dinitrate, nickel dinitrate, lead nitrate are listed

Vruchtbaarheid

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

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

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SECTION 16: Other information

Indication of changes			
Section	Changed item	Change	Comments
	Supersedes version of	Added	
	Revision date	Modified	
	Flammability	Modified	
1.1	Trade name	Added	
2.2	Precautionary statements (CLP)	Modified	
8.2	Personal protective equipment	Modified	
12.1	Ecology - general	Modified	
15.1	REACH Annex XVII	Modified	
16	Abbreviations and acronyms	Added	

Abbreviations and acronyms:	
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)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
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
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail

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Abbreviations and acronyms:	
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disrupting properties

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
EUH208	Contains nickel dinitrate. May produce an allergic reaction.
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H271	May cause fire or explosion; strong oxidiser.
H272	May intensify fire; oxidiser.
H290	May be corrosive to metals.
H300	Fatal if swallowed.

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Full text of H- and EUH-statements:	
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.
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.
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
Ox. Sol. 1	Oxidising Solids, Category 1
Ox. Sol. 2	Oxidising Solids, Category 2
Ox. Sol. 3	Oxidising Solids, Category 3
Repr. 1A	Reproductive toxicity, Category 1A

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Full text of H- and EUH-statements:	
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

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

Safety Data Sheet (SDS), EU

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.