

Safety Data Sheet

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

Reference number: EQ0007

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 : Interference Check Solution B for ICP/MS - 11 components
Product code : EQ0007

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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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; chromium trinitrate; cobalt dinitrate; copper dinitrate; manganese dinitrate; nickel dinitrate; ammonium metavanadate; arsenic acid; cadmium nitrate; selenious acid; zinc nitrate; silver 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
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
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
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
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
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
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
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
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
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

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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

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

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, 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
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), H330 Skin Sens. 1A, H317 Aquatic Chronic 2, H411
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
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
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
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)

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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
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

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	Typpihapo
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	SALÉTRÓMSAV
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/ЕС и за измените на директивата 91/322/ЕЕС и директивата 2000/39/ ЕС (Сл. весник бр. 38 од ден 9.2.2006, стр. 36)
Regulatory reference	Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)
Switzerland - Occupational Exposure Limits	
Local name	Acide nitrique / Salpetersäure
MAK (OEL TWA) [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
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	BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Chrome métal et composés inorganiques (à l'exception des composés Cr VI) # Chroom (metaal) en anorganische verbindingen (met uitzondering van Cr VI verbindingen)
OEL TWA	0,5 mg/m 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

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chromium trinitrate (13548-38-4)	
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 terveystieteiden ministeriö)
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)
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 (Túlerzékenységet okozó (szenzibilizáló) tulajdonságú anyag. Az anyagra érzékeny egyéneken „túlerzékenységen” alapuló bőr-, légzőrendszeri, esetleg más szövet/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)

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chromium trinitrate (13548-38-4)	
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	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)
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

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chromium trinitrate (13548-38-4)	
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 metallic, 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
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, 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)

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chromium trinitrate (13548-38-4)	
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
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
cobalt dinitrate (10141-05-6)	
Austria - Occupational Exposure Limits	
Local name	Cobalt und seine Verbindungen (Cobalt als Cobaltmetall, Cobaltoxid, Cobaltsulfid und Cobaltsulfat, Staub von Cobaltlegierungen)
TRK (OEL TWA)	0,5 mg/m 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. Krebs erzeugend: 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

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cobalt dinitrate (10141-05-6)	
Remark	Eignung mit vorzeitiger Folgeuntersuchung: Überschreiten des Grenzwertes für Cobalt im Harn. Bei Vorliegen einer wesentlichen Beeinträchtigung der Lungenfunktion. Diese liegt vor, wenn nach mehrmaliger Messung der beste gemessene Wert den für den/die Untersuchte/n maßgebenden Sollwert um 20% unterschreitet, bzw. den MEF50-Sollwert um 50% unterschreitet. Eine vorzeitige Folgeuntersuchung ist jedoch nicht erforderlich, wenn im Vergleich zu Vorbefunden der altersabhängige physiologische Abfall der 1 Sekundenkapazität (FEV1) von 40 ml/Jahr nicht überschritten wird oder aus der Beurteilung des Kurvenverlaufes der Forcierten Vitalkapazität (FVC) eine eingeschränkte Mitarbeit des Untersuchten/der Untersuchten ersichtlich ist. 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, граниčnim vrijednostima izloženosti i biološkim граниčnim 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
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

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cobalt dinitrate (10141-05-6)	
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
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); 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	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

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cobalt dinitrate (10141-05-6)	
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
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 laboratorio con relevância desconhecida no Homem); IBE (Índice biológico de exposição)
Regulatory reference	Norma Portuguesa NP 1796:2014
Portugal - Biological Exposure Indices	
Local name	Cobalto
BEI	15 µg/l Parâmetro: Cobalto - Meio: urina - Momento da amostragem: Fim do turno no fim da semana de trabalho - Notação: Vb (Valor basal) 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

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cobalt dinitrate (10141-05-6)	
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 Indicator biologic: Cobalt - Material biologic: urină - Momentul recoltării: sfârşit de săptămână 1 µg/l Indicator 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
BLV	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) 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)
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

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cobalt dinitrate (10141-05-6)	
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); 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)
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
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)

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cobalt dinitrate (10141-05-6)	
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
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)

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copper dinitrate (3251-23-8)	
Czech Republic - Occupational Exposure Limits	
Local name	Měď
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 terveystiete)
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 jelentkezik)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Copper (as Cu)
OEL TWA [1]	0,2 mg/m ³ Fume 1 mg/m ³ Dusts and mists

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copper dinitrate (3251-23-8)	
Regulatory reference	Chemical Agents Code of Practice 2021
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
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)

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manganese dinitrate (10377-66-9)	
Regulatory reference	SCOEL Recommendations SCOEL Recommendations
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, graničnim vrijednostima izloženosti i biološkim graničnim 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

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manganese dinitrate (10377-66-9)	
Remark	V - vdechovatelná frakce aerosolu, R - respirabilní frakce aerosolu.
Regulatory reference	Nariadení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
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

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manganese dinitrate (10377-66-9)	
Latvia - Occupational Exposure Limits	
Local name	Mangānsmetināšanas aerosolos(kondensācijas aerosols)
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)
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	Fracja 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

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manganese dinitrate (10377-66-9)	
Spain - Occupational Exposure Limits	
Local name	Manganeso
VLA-ED (OEL TWA) [1]	0,2 mg/m ³ elemental. Fracción inhalable 0,2 mg/m ³ Compuestos inorgánicos de Manganeso, como Mn. Fracción inhalable 0,05 mg/m ³ elemental. Fracción respirable 0,05 mg/m ³ Compuestos inorgánicos de manganeso, como Mn. Fracción respirable
Remark	VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo), d (Véase UNE EN 481: Atmósferas en los puestos de trabajo. Definición de las fracciones por el tamaño de las partículas para la medición de aerosoles).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 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 örfínt 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 (l) 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
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))

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ammonium metavanadate (7803-55-6)	
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
Grænseverdi (OEL TWA) [1]	0,05 mg/m ³ Røyk beregnet som V) 0,2 mg/m ³ Støv (beregnet som V)
Takverdi (OEL C) [1]	0,05 mg/m ³ Røyk (beregnet som V)
Regulatory reference	FOR-2021-06-28-2248
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)
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)

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arsenic acid (7778-39-4)	
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 reprotoiques 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 živžnim 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 živžnim 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 - Biologický vzorek: moči - Doba odběru: konec pracovního týdne 0,075 µmol/mmol Creatinine Ukazatel: Arsen - Biologický 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
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 arseenhüdriid (arvutatud arseenile)
OEL TWA	0,03 mg/m ³

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arsenic acid (7778-39-4)	
Remark	C (Kantserogeenne aine), 3 (Vääveldioksiid tugevdab arseeni kantserogeeniseid 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), Monomethylarsonsäure und Dimethylarsinsäure
Testing material	U - Urin
Testing time	b - Expositionsende bzw. Schichtende, c - Bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten
Regulatory reference	TRGS 910
Hungary - Occupational Exposure Limits	
Local name	ARZÉN ÉS SZERVETLEN VEGYÜLETEI (arzin kivételével), (As-ra számítva)
AK (OEL TWA)	0,01 mg/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)
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

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arsenic acid (7778-39-4)	
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 (įkvepiamoji 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
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

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arsenic acid (7778-39-4)	
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 AsH ₃
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 (As ₂ O ₅) 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
VLA-ED (OEL TWA) [1]	0,01 mg/m ³

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arsenic acid (7778-39-4)	
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 ólífræn 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 brennisteinsdíoxíð 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 anmerkning 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
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)
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

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cadmium nitrate (10325-94-7)	
Remark	<p>Eignung mit vorzeitiger Folgeuntersuchung: Bei Überschreiten des Grenzwertes für Cadmium im Harn. Bei Überschreiten des der angewendeten NAG-Bestimmungsmethode entsprechenden Grenzwertes im Harn. Bei wiederholter Überschreitung des Harngrenzwertes für NAG ist eine fachärztliche Abklärung anzuraten. Bei Vorliegen einer wesentlichen Beeinträchtigung der Lungenfunktion. Diese liegt vor, wenn nach mehrmaliger Messung der beste gemessene Wert den für den/die Untersuchte/n maßgebenden Sollwert um 20% unterschreitet bzw. den MEF50-Sollwert um 50% unterschreitet. Eine vorzeitige Folgeuntersuchung ist jedoch nicht erforderlich, wenn im Vergleich zu Vorbefunden der altersabhängige physiologische Abfall der 1-Sekundenkapazität (FEV1) von 40 ml/Jahr nicht überschritten wird oder aus der Beurteilung des Kurvenverlaufes der Forcierten Vitalkapazität (FVC) eine eingeschränkte Mitarbeit des Untersuchten/der Untersuchten ersichtlich ist.</p> <p>Der Zeitabstand zwischen den Untersuchungen beträgt bei Eignung: ein Jahr; bei Eignung mit vorzeitiger Folgeuntersuchung: sechs Monate. Bei der vorzeitigen Folgeuntersuchung ist nur jener Untersuchungsbefund zu erheben, der die vorzeitige Folgeuntersuchung begründet hat.</p>
Regulatory reference	Verordnung über die Gesundheitsüberwachung am Arbeitsplatz 2017 (VGÜ 2017)
Belgium - Occupational Exposure Limits	
Local name	Cadmium et ses composés (en Cd) # Cadmium en verbindingsen, als Cd
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 cancérogènes, mutagènes et reprotoïques du livre VI du code de bien-être au travail. # C: de vermelding "C" betekent dat het betrokken agens valt onder het toepassingsgebied van titel 2 betreffende kankerverwekkende, mutagene en reprotoxische agentia van boek VI van de codex over het welzijn op het werk.
Regulatory reference	Koninklijk besluit/Arrêté royal 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 (tvari koje su vjerojatno karcinogene za ljude); Muta. kat. 3 (tvari koje izazivaju zabrinutost zbog mogućeg mutagenog djelovanja na ljude); Repr. kat. 3 (tvari za koje se pretpostavlja da bi mogle smanjiti plodnost kod ljudi i/ili – tvari za koje se pretpostavlja da bi mogle iskazati razvojnu otrovnost kod ljudi)
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	Kadmij

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cadmium nitrate (10325-94-7)	
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.)
Czech Republic - Biological limit values	
Local name	Kadmium
BLV	0,005 mg/g creatinine Ukazatel: Kadmium - Biologický vzorek: moči - Doba odběru: nerozhoduje 0,005 µmol/mmol Creatinine Ukazatel: Kadmium - Biologický vzorek: moči - Doba odběru: nerozhoduje 0,005 mg/l Ukazatel: Kadmium - Biologický vzorek: krvi - Doba odběru: nerozhoduje 0,045 µmol/l Ukazatel: Kadmium - Biologický 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 terveystieteisteriö)
Finland - Biological limit values	
Local name	Kadmium, metalli
BLV	20 nmol/l Parametri: Virtsan kadmium - Näytteenottoajankohta: Työiikon lopulla. Vuorokaudenajalla ei merkitystä.
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteisteriö)
France - Occupational Exposure Limits	
Local name	Cadmium et composés, en Cd

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cadmium nitrate (10325-94-7)	
VME (OEL TWA)	0,05 mg/m ³
Remark	Valeurs recommandées/admises; certains ou tous ces composés sont classés cancérigène 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
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

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cadmium nitrate (10325-94-7)	
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	Kadmijstuntā neorganiskie savienojumi
OEL TWA	0,01 mg/m ³
Remark	Carc. 1B. Ielņemamā 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 inalbbli. Frazzjoni respirabbli f'dawk l-Istati Membri li, fid-data tad-dhul fis-seħħ ta' din id-Direttiva, jimplimentaw sistema ta' bijomonitoraġġ b'valur limitu bijoloġiku li mahaqbiżx 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)

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cadmium nitrate (10325-94-7)	
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 compostos, expressos em Cd
OEL TWA	0,01 mg/m ³ 0,002 mg/m ³ R (Fração respirável)
Remark	A2 (Agente carcinogénico confirmado nos animais de laboratório con relevância desconhecida no Homem); IBE (Índice biológico de exposição)
Regulatory reference	Norma Portuguesa NP 1796:2014
Portugal - Biological Exposure Indices	
Local name	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	Cadmii 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	Cadmii și compuși anorganici
BLV	2 µg/g creatinine Indicator biologic: Cadmiu - Material biologic: urină - Momentul recoltării: sfârșit de schimb 5 µg/l Indicator biologic: Cadmiu - Material biologic: sânge - Momentul recoltării: sfârșit de schimb 2 mg/l Indicator 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 - Vyšetovaný materiál: moč - Čas odberu vzorky: a) žiadne obmedzenie
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (Zmena: 471/2011 Z.z.)

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cadmium nitrate (10325-94-7)	
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
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

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cadmium nitrate (10325-94-7)	
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
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 цинk, olovo и бакар со термички процес, заварување легури на кадмиум; (I) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува 0,015 mg/m ³ Други; (I) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува
KTV	4
Short time value [mg/m ³]	0,12 mg/m ³

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cadmium nitrate (10325-94-7)	
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; (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
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)

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selenious acid (7783-00-8)	
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, graničnim vrijednostima izloženosti i biološkim graničnim 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
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
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

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selenious acid (7783-00-8)	
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 selanu 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
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, 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)

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selenious acid (7783-00-8)	
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.)
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
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

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silver nitrate (7761-88-8)	
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))
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

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silver nitrate (7761-88-8)	
PEL (OEL TWA)	0,1 mg/m ³
NPK-P (OEL C)	0,3 mg/m ³
Regulatory reference	Nariadení 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
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

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silver nitrate (7761-88-8)	
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 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	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,metāliskais
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
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

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silver nitrate (7761-88-8)	
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	EУ* – 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).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
Sweden - Occupational Exposure Limits	
Local name	Silver, metall och svårlösliga 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)

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silver nitrate (7761-88-8)	
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
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

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silver nitrate (7761-88-8)

Regulatory reference

ACGIH 2022

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
Odour	: Not available
Odour threshold	: Not available

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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	: 1,07
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

nitric acid (7697-37-2)

LC50 Inhalation - Rat	> 2,65 mg/L air
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chromium trinitrate (13548-38-4)	
LD50 oral rat	900 – 3010 mg/kg
LC50 Inhalation - Rat	< 4,58 mg/L air
cobalt dinitrate (10141-05-6)	
LD50 oral rat	691 mg/kg
LD50 dermal rat	> 2000 mg/kg bodyweight
copper dinitrate (3251-23-8)	
LD50 oral rat	794 mg/kg
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
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
arsenic acid (7778-39-4)	
LD50 oral	149,6 mg/kg bodyweight (mouse)
LD50 dermal rabbit	2000 (1583 – 2417) mg/kg
cadmium nitrate (10325-94-7)	
LD50 oral rat	300 mg/kg bodyweight
LD50 oral	60,2 mg/kg bodyweight mouse
selenious acid (7783-00-8)	
LD50 oral rat	68,1 mg/kg
silver nitrate (7761-88-8)	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rat	> 2000 mg/kg
Skin corrosion/irritation : Causes severe skin burns.	
nitric acid (7697-37-2)	
pH	< 1
chromium trinitrate (13548-38-4)	
pH	2 – 3
cobalt dinitrate (10141-05-6)	
pH	4
copper dinitrate (3251-23-8)	
pH	< 2

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manganese dinitrate (10377-66-9)	
pH	< 2
nickel dinitrate (13138-45-9)	
pH	3,5 – 5,5 (5 %)
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
chromium trinitrate (13548-38-4)	
pH	2 – 3
cobalt dinitrate (10141-05-6)	
pH	4
copper dinitrate (3251-23-8)	
pH	< 2
manganese dinitrate (10377-66-9)	
pH	< 2
nickel dinitrate (13138-45-9)	
pH	3,5 – 5,5 (5 %)
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
chromium trinitrate (13548-38-4)	
IARC group	3 - Not classifiable
cobalt dinitrate (10141-05-6)	
IARC group	2B - Possibly carcinogenic to humans
arsenic acid (7778-39-4)	
IARC group	2B - Possibly carcinogenic to humans
cadmium nitrate (10325-94-7)	
IARC group	1 - Carcinogenic to humans
selenious acid (7783-00-8)	
IARC group	3 - Not classifiable
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
nitric acid (7697-37-2)	
NOAEL (oral, rat, 90 days)	1500 mg/kg bodyweight

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nitric acid (7697-37-2)	
NOAEC (inhalation, rat, gas, 90 days)	2,15 ppm
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
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.
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.
cadmium nitrate (10325-94-7)	
STOT-repeated exposure	Causes damage to organs (bone, kidneys, lungs) through prolonged or repeated exposure.
selenious acid (7783-00-8)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
silver nitrate (7761-88-8)	
LOAEL (oral, rat, 90 days)	125 mg/kg bodyweight
Aspiration hazard	: Not classified
nitric acid (7697-37-2)	
Viscosity, kinematic	0,595 mm ² /s
ammonium metavanadate (7803-55-6)	
Viscosity, kinematic	Not applicable
11.2. Information on other hazards	
No additional information available	
SECTION 12: Ecological information	
12.1. Toxicity	
Ecology - general	: Before neutralisation, the product may represent a danger to aquatic organisms.
Hazardous to the aquatic environment, short-term (acute)	: Not classified
Hazardous to the aquatic environment, long-term (chronic)	: Not classified
nitric acid (7697-37-2)	
EC50 - Crustacea [1]	180 mg/l Daphnia magna (Water flea)
Threshold limit - Algae [1]	> 19 mg/l
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>
cobalt dinitrate (10141-05-6)	
LC50 - Fish [1]	1,5 mg/l (mg Co/L) <i>Oncorhynchus mykiss</i> (Rainbow trout)
EC50 - Crustacea [1]	5,89 mg/l <i>Daphnia magna</i> (Water flea)
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>
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>
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)
arsenic acid (7778-39-4)	
LC50 - Fish [1]	28 mg/l <i>Oncorhynchus mykiss</i> (Rainbow trout)
EC50 - Crustacea [1]	3,26 mg/l <i>Daphnia magna</i> (Water flea)
LOEC (chronic)	0,01 mg/l <i>Daphnia pulex</i>
NOEC (chronic)	> 1 mg/l <i>Daphnia pulex</i>
NOEC chronic fish	0,97 mg/l <i>Pimephales promelas</i> (Fathead minnow)
cadmium nitrate (10325-94-7)	
LC50 - Fish [1]	34 µg/l <i>Salmo Salar</i>
EC50 - Crustacea [1]	0,04 mg/l <i>Daphnia magna</i> (Water flea)
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)
silver nitrate (7761-88-8)	
LC50 - Fish [1]	1,5 µg/l (Silver (Ag)) <i>Pimephales promelas</i> (Fathead minnow)
EC50 - Crustacea [1]	0,22 µg/l Silver (Ag) <i>Daphnia magna</i> (Water flea)

12.2. Persistence and degradability

ammonium metavanadate (7803-55-6)	
Persistence and degradability	Adsorbs into the soil.

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12.3. Bioaccumulative potential

nitric acid (7697-37-2)

Partition coefficient n-octanol/water (Log Pow)	-2,3
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arsenic acid (7778-39-4)

Bioaccumulative potential	bioaccumulable.
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cadmium nitrate (10325-94-7)

Bioaccumulative potential	bioaccumulable.
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selenious acid (7783-00-8)

Bioaccumulative potential	bioaccumulable.
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silver nitrate (7761-88-8)

Partition coefficient n-octanol/water (Log Pow)	0,19 (estimated value)
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12.4. Mobility in soil

No additional information available

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
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
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
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
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
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
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
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
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
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

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

No additional information available

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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
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

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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
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

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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
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)	Interference Check Solution B for ICP/MS - 11 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.
65.	ammonium metavanadate	Inorganic ammonium salts

REACH Annex XIV (Authorisation List)

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

REACH Candidate List (SVHC)

Contains substance(s) listed on the REACH Candidate List in concentrations $\geq 0.1\%$ or SCL: Cobalt(II) dinitrate (EC 233-402-1, CAS 10141-05-6), Arsenic acid (EC 231-901-9, CAS 7778-39-4)

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)

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.

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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

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)

15.1.2. National regulations

France

Occupational diseases	
Code	Description
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)

Storage class (LGK, TRGS 510)

Joint storage table

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

: LGK 8B - Non-combustible corrosive substances.

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

Joint storage with restrictions permitted for

Joint storage permitted for

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

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

: 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)

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Netherlands

ABM category	: A(3) - hazardous for aquatic organisms, may have longterm hazardous effects in aquatic environment
SZW-lijst van kankerverwekkende stoffen	: cobalt dinitrate,nickel dinitrate,ammonium metavanadate,cadmium nitrate are listed
SZW-lijst van mutagene stoffen	: ammonium metavanadate,cadmium nitrate are listed
SZW-lijst van reprotoxische stoffen – Borstvoeding	: nickel dinitrate is listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid	: cobalt dinitrate,manganese dinitrate,nickel dinitrate are listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling	: manganese dinitrate,nickel dinitrate 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
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15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes			
Section	Changed item	Change	Comments
	Supersedes version of	Added	
	Revision date	Modified	
	Flammability	Modified	
1.1	Trade name	Added	
1.1	Name	Modified	
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

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Abbreviations and acronyms:	
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
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 (Inhalation)	Acute toxicity (inhal.), Category 1
Acute Tox. 2 (Inhalation)	Acute toxicity (inhal.), 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 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

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Full text of H- and EUH-statements:	
Carc. 1A	Carcinogenicity (inhalation) Category 1A
Carc. 1B	Carcinogenicity (inhalation) Category 1B
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
H272	May intensify fire; oxidiser.
H290	May be corrosive to metals.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
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.
H340	May cause genetic defects.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H350i	May cause cancer by inhalation.
H360D	May damage the unborn child.
H360FD	May damage fertility. May damage the unborn child.
H361d	Suspected of damaging the unborn child.
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. 2	Oxidising Solids, Category 2
Ox. Sol. 3	Oxidising Solids, Category 3

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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
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

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.