SAFETY DATA SHEET

Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2020/878

NYRSTAR LEACH PRODUCT

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

1.1. Product identifier

Product name	:	NYRSTAR LEACH PRODUCT
Synonyms	:	leach residues, zinc ore, lead-contg.; NLP (Nyrstar Leach Product), BLP (Balen Leach Product), ALP (Auby Leach Product), BuLP (Budel Leach Product)
Registration number REACH	:	01-2119474886-19-0001 (Nyrstar Belgium NV/SA) 01-2119474886-19-0010 (Nyrstar Budel BV) 01-2119474886-19-0005 (Nyrstar France SAS)
Product type REACH	:	On-site isolated intermediate
	:	Transported isolated intermediate
CAS number	:	91053-49-5
EC number	:	293-314-4

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

1.2.1 Relevant identified uses

The substance is defined as intermediate under Regulation (EC) No 1907/2006, not fulfilling the definition of strictly controlled conditions for which consequently an Article 10 (full) registration is required

IU1: production of the intermediate - During the hydrometallurgical production of zinc and/or zinc-compounds, leach residue and/or gascleaning residues concentrate the Pb- and/or other compounds from the feed. This material is extracted and isolated for further processing.

IU2: Handling and storage of the intermediate: Handling and temporary storage in bulk take place after production and before further processing of the intermediate

IU3: use of the intermediate - The material is unloaded, blended with other, primary and/or secondary materials, and loaded in smelting furnaces (ISA, Blast, convertor, ...) or similar, or in hydrometallurgical steps for further processing and extraction of non-ferrous metals (Pb, Ag, ...) and/or their compounds.

For more detailed information regarding the Identified Uses and the associated Exposure Scenarios: see attached annex

1.2.2 Uses advised against

No uses advised against known

1.3. Details of the supplier of the safety data sheet

Supplier of the safety data sheet

Nyrstar Belgium N.V. on behalf of Nyrstar Sales & Marketing A.G.
Zinkstraat 1
B-2490 Balen
☎ +32 14 44 95 00
🖷 +32 14 81 05 31
infoSDS@nyrstar.com

Nyrstar Budel B.V. on behalf of Nyrstar Sales & Marketing A.G.
Hoofdstraat 1
6024 AA Budel-Dorplein
☎ +32 14 44 96 80
🖷 +32 14 44 95 52
infoSDS@nyrstar.com

Nyrstar France S.A.S. on behalf of Nyrstar Sales & Marketing A.G.
Rue Jean Jacques Rousseau
F-59950 Auby
☎ +32 14 44 96 80
🖷 +33 3 27 88 39 48
infoSDS@nyrstar.com

Manufacturer of the product

Nyrstar Sales & Marketing SA
1 Rue de Jargonnant
CH-1207 Geneva
infoSDS@nyrstar.com

1.4. Emergency telephone number

24h/24h (Telephone advice: English, French, German, Dutch) :
+32 14 58 45 45 (BIG)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statements
Carc.	category 1A	H350i: May cause cancer by inhalation.
Muta.	category 1B	H340: May cause genetic defects.
Repr.	category 1A	H360FD: May damage fertility. May damage the unborn child.
Acute Tox.	category 4	H332: Harmful if inhaled.
Acute Tox.	category 4	H302: Harmful if swallowed.
STOT RE	category 2	H373: May cause damage to organs (blood system, central nervous system, lungs, kidneys) through prolonged or repeated exposure.
Eye Dam.	category 1	H318: Causes serious eye damage.
Aquatic Acute	category 1	H400: Very toxic to aquatic life.
Aquatic Chronic	category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2. Label elements

Signal word Danger

H-statements

H350i	May cause cancer by inhalation.
H340	May cause genetic defects.
H360FD	May damage fertility. May damage the unborn child.
H302 + H332	Harmful if swallowed or if inhaled.
H373	May cause damage to organs (blood system, central nervous system, lungs, kidneys) through prolonged or repeated exposure.
H318	Causes serious eye damage.
H410	Very toxic to aquatic life with long lasting effects.

P-statements

P280	Wear protective gloves, protective clothing and eye protection/face protection.
P260	Do not breathe dust.
P270	Do not eat, drink or smoke when using this product.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P330	Rinse mouth.
P310	Immediately call a POISON CENTER/doctor.

Supplemental information

Restricted to professional users.

2.3. Other hazards

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name REACH Registration No	CAS No EC No	Conc. (C)	Classification according to CLP	Note	Remark	M-factors and ATE
lead(II)sulphate	7446-14-2 231-198-9	C<35%	Repr. 1A; H360Df Acute Tox. 4; H332 Acute Tox. 4; H302 STOT RE 2; H373 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 Repr. 2; H361f: C≥2,5%, (CLP Annex VI (ATP 0)) STOT RE 2; H373: C≥0,5%, (CLP Annex VI (ATP 0))	(1)(2)(10)	Constituent	M: 1 (Acute, BIG)
diiron zinc tetraoxide	12063-19-3 235-052-5	C<35%			Constituent	

calcium sulfate 01-2119444918-26	7778-18-9 231-900-3	C<25%		(2)	Constituent	
zinc sulphate (anhydrous)	7733-02-0 231-793-3	C<10%	Acute Tox. 4; H302 Eye Dam. 1; H318 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	(1)(10)	Constituent	M: 1 (Acute, ECHA (registration dossier)) M: 1 (Chronic, ECHA (registration dossier))
silica, precipitated	112926-00-8	C<25%		(2)	Constituent	
barium salts, with the exception of barium sulphate, salts of 1-azo-2-hydroxynaphthalenyl aryl sulphonic acid, and of salts specified elsewhere in this Annex	68855-79-8 272-497-4	C≤4%	Acute Tox. 4*; H332 Acute Tox. 4*; H302	(1)(6)	Constituent	
copper sulphate	7758-98-7 231-847-6	C<1%	Acute Tox. 4; H302 Eye Dam. 1; H318 Skin Irrit. 2; H315 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	(1)(2)(6)(10)	Constituent	
cadmium sulphate	10124-36-4 233-331-6	C<1%	Carc. 1B; H350 Muta. 1B; H340 Repr. 1B; H360FD Acute Tox. 2; H330 Acute Tox. 3; H301 STOT RE 1; H372 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 Carc. 1B; H350: C≥0,01%, (CLP Annex VI (ATP 0)) STOT RE 1; H372: C≥7%, (CLP Annex VI (ATP 0)) STOT RE 2; H373: 0,1%≤C<7%, (CLP Annex VI (ATP 0))	(1)(2)(4)(10)	Constituent	M: 10 (Acute, ECHA) M: 10 (Chronic, ECHA)
manganese sulphate	7785-87-7 232-089-9	C<1%	STOT RE 2; H373 Aquatic Chronic 2; H411	(1)(2)	Constituent	
iron arsenate	10102-49-5 233-274-7	C<2.1%	Carc. 1A; H350 Acute Tox. 3; H331 Acute Tox. 3; H301 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	(1)(2)(10)	Constituent	M: 1 (Acute, BIG)
zinc sulphide	1314-98-3 215-251-3	C<4%			Constituent	
sulfur	7704-34-9 231-722-6	C<3%	Skin Irrit. 2; H315	(1)(10)	Constituent	
magnesium sulphate	7487-88-9 231-298-2	C<1%			Constituent	
aluminium oxide	1344-28-1 215-691-6	C<1%		(2)	Constituent	
iron sulphide	1317-37-9 215-268-6	C<1%		(2)	Constituent	
tin oxide	1332-29-2 215-569-2	C<1%		(2)	Constituent	
Iron hydroxide	11113-66-9 234-345-0	C<1%			Constituent	
calcium dihydroxide	1305-62-0 215-137-3	C<6%	Eye Dam. 1; H318 Skin Irrit. 2; H315 STOT SE 3; H335	(1)(2)	Constituent	

(1) For H- and EUH-statements in full: see section 16
(2) Substance with a Community workplace exposure limit
(4) Enumerated in candidate list of substances of very high concern (SVHC) for authorisation (Article 59 of Regulation (EC) No. 1907/2006)
(6) Enumerated in Annex VI of Regulation (EC) No. 1272/2008 but the classification has been adapted after evaluation of available test data
(10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006

SECTION 4: First aid measures

4.1. Description of first aid measures

General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Rinse with water. Do not apply (chemical) neutralizing agents without medical advice. Take victim to a doctor if irritation persists.

After eye contact:

Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply (chemical) neutralizing agents without medical advice. Take victim to an ophthalmologist.

After ingestion:

Rinse mouth with water. Do not apply (chemical) neutralizing agents without medical advice. Consult a doctor/medical service if you feel unwell.

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

4.2.1 Acute symptoms

After inhalation:

AFTER INHALATION OF FUME: FOLLOWING SYMPTOMS MAY APPEAR LATER: Metal fume fever. Feeling of weakness. Body temperature rise. Headache. Nausea. Vomiting. Metal taste. Muscular pain. Rapid respiration. Respiratory difficulties. Possible oedema of the upper respiratory tract. Risk of lung oedema. Respiratory collapse.

After skin contact:

No effects known.

After eye contact:

Corrosion of the eye tissue. Inflammation/damage of the eye tissue.

After ingestion:

AFTER INGESTION OF HIGH QUANTITIES: Metal taste. Dry/sore throat. Nausea. Vomiting. Abdominal pain. Feeling of weakness. Headache.

4.2.2 Delayed symptoms

No effects known.

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

If applicable and available it will be listed below.

SECTION 5: Firefighting measures

5.1. Extinguishing media

5.1.1 Suitable extinguishing media:

Adapt extinguishing media to the environment for surrounding fires.

5.1.2 Unsuitable extinguishing media:

Not applicable.

5.2. Special hazards arising from the substance or mixture

On heating (>1000°C): release of toxic and corrosive gases/vapours (lead oxides, sulphur oxides, zinc oxides).

5.3. Advice for firefighters

5.3.1 Instructions:

Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.

5.3.2 Special protective equipment for fire-fighters:

Gloves (EN 374). Safety glasses (EN 166). Protective clothing (EN 14605 or EN 13034). Dust cloud production: self-contained breathing apparatus (EN 136 + EN 137). Heat/fire exposure: self-contained breathing apparatus (EN 136 + EN 137).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Prevent dust cloud formation. No naked flames. Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.

6.1.1 Protective equipment for non-emergency personnel

See section 8.2

6.1.2 Protective equipment for emergency responders

Gloves (EN 374). Safety glasses (EN 166). Protective clothing (EN 14605 or EN 13034). Dust cloud production: self-contained breathing apparatus (EN 136 + EN 137).

Suitable protective clothing

See section 8.2

6.2. Environmental precautions

Contain released product, collect/pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray. Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

Prevent dust cloud formation. Scoop solid spill into closing containers. Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

See section 13.

SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

7.1. Precautions for safe handling

Avoid raising dust. Keep away from naked flames/heat. Observe very strict hygiene - avoid contact. Remove contaminated clothing immediately. Do not discharge the waste into the drain. Avoid dehydratation. Keep container tightly closed.

7.2. Conditions for safe storage, including any incompatibilities

7.2.1 Safe storage requirements:

Storage temperature: -15 °C - 35 °C. Meet the legal requirements.

7.2.2 Keep away from:

Heat sources.

7.2.3 Suitable packaging material:

No data available

7.2.4 Non suitable packaging material:

No data available

7.3. Specific end use(s)

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 Occupational exposure

a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

EU

Arsenic acid and its salts, as well as inorganic arsenic compounds	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	0.01 mg/m³ (1)
Cadmium and its inorganic compounds	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	0.001 mg/m³ (10)
Calcium dihydroxide	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	1 mg/m³ (2)
	Short time value (Indicative occupational exposure limit value)	4 mg/m³ (2)
Inorganic lead and its compounds	Time-weighted average exposure limit 8 h (Limit value for occupational exposure)	0.15 mg/m³
Manganese and inorganic manganese compounds (as manganese)	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	0.05 mg/m³ (2)
	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	0.2 mg/m³ (1)
Tin (inorganic compounds as Sn)	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	2 mg/m³

(1): Inhalable fraction

(10): Inhalable fraction. Limit value 0,004 mg/m3 until 11 July 2027. 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.

(2): Respirable fraction

Belgium

Aluminium (métal et composés insolubles, fraction alvéolaire)	Time-weighted average exposure limit 8 h	1 mg/m³
Arsenic, acide arsénique et ses sels, ainsi que ses composés inorganiques (en As)	Time-weighted average exposure limit 8 h	0.01 mg/m³
Cadmium et ses composés (particules alvéolaires) (en Cd)	Time-weighted average exposure limit 8 h	0.002 mg/m³
Cadmium et ses composés (particules inhalables) (en Cd) *shall apply from 2027-07-12*	Time-weighted average exposure limit 8 h	0.001 mg/m³
Cadmium et ses composés (particules inhalables) (en Cd) *shall apply until 2027-07-11*	Time-weighted average exposure limit 8 h	0.004 mg/m³
Calcium (dihydroxyde de) (fraction alvéolaire)	Time-weighted average exposure limit 8 h	1 mg/m³
	Short time value	4 mg/m³
Calcium (sulfate de) (anhydrate, hemihydrate, dihydrate, gypse)	Time-weighted average exposure limit 8 h	10 mg/m³
Etain (oxyde et composés inorganiques de; sauf SnH4, en Sn)	Time-weighted average exposure limit 8 h	2 mg/m³
Manganèse et ses composés (en Mn) (fraction respirable)	Time-weighted average exposure limit 8 h	0.05 mg/m³
Manganèse et ses composés (en Mn)	Time-weighted average exposure limit 8 h	0.2 mg/m³
Plomb inorg. (poussières et fumées) (en Pb)	Time-weighted average exposure limit 8 h	0.15 mg/m³
Silices amorphes : précipités (gel de silice)	Time-weighted average exposure limit 8 h	10 mg/m³

The Netherlands

Cadmium en anorganische cadmiumverbindingen (als Cd) *shall apply until 2027-07-10*	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.00086 ppm **(1)**
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.004 mg/m³ **(1)**
Calcium-dihydroxide	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.33 ppm **(2)**
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	1 mg/m³ **(2)**
	Short time value (Public occupational exposure limit value)	1.3 ppm **(2)**
	Short time value (Public occupational exposure limit value)	4 mg/m³ **(2)**
In water onoplosbare zouten van arseenzuur (als As)	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	9E-5 ppm **(3)**
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.28 µg/m³ **(3)**
Koper en anorganische koperverbindingen (inhaleerbaar)	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.1 mg/m³ **(4)**
Lood en anorganische loodverbindingen	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.15 mg/m³ **(5)**
Mangaan en anorganische mangaan-verbindingen (als mangaan)	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.022 ppm **(6)**
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.088 ppm **(7)**
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.05 mg/m³ **(6)**
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.2 mg/m³ **(7)**
Tin (anorganische verbindingen als Sn)	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.41 ppm **(8)**
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	2 mg/m³ **(8)**

(1) als Cd
(2) respirabel
(3) als As
(4) inhaleerbaar
(5) Als grenswaarde als bedoeld in artikel 4.3, eerste lid, jo. artikel 4.1, tweede lid, onder b, van het besluit, wordt voor lood vastgesteld: 70 µg/100 ml bloed.
(6) respirabel, als mangaan
(7) inhaleerbaar, als mangaan
(8) als Sn

France

Aluminium (trioxyde de di-)	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	10 mg/m³
Cadmium et ses composés inorganiques (fraction inhalable ou alvéolaire) *shall apply from 2027-07-12*	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	0.001 mg/m³ **(1)**
Cadmium et ses composés inorganiques (fraction inhalable ou alvéolaire) *shall apply until 2027-07-11*	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	0.004 mg/m³ **(1)**
Calcium (hydroxyde de) fraction alvéolaire	Time-weighted average exposure limit 8 h (VRI: Valeur réglementaire indicative)	1 mg/m³
	Short time value (VRI: Valeur réglementaire indicative)	4 mg/m³
Calcium (sulfate de)	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	10 mg/m³
Manganèse et ses composés fraction alvéolaire exprimé en manganèse	Time-weighted average exposure limit 8 h (VRI: Valeur réglementaire indicative)	0.05 mg/m³
Manganèse et ses composés fraction inhalable exprimé en manganèse	Time-weighted average exposure limit 8 h (VRI: Valeur réglementaire indicative)	0.20 mg/m³
Plomb métallique et composés, en Pb	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	0.1 mg/m³

(1) Fraction inhalable. Fraction alvéolaire si une surveillance biologique organisée par le médecin du travail permet de s'assurer du respect d'une valeur biologique maximale de 2 µg Cd/g de créatinine dans les urines.

Germany

Aluminium-, Aluminiumoxid-, Aluminiumhydroxid-haltige Stäube (alveolengängige Fraktion)	*vgl. Abschn. V f) und g)*	
Aluminium-, Aluminiumoxid-, Aluminiumhydroxid-haltige Stäube (einatembare Fraktion)	*vgl. Abschn. V f) und g)*	
Arsenverbindungen, als Carc. 1A, Carc. 1B eingestuft	*Die Konzentrationen beziehen sich auf den Elementgehalt des entsprechenden Metalls*	
Blei und anorganischen Bleiverbindungen	Time-weighted average exposure limit 8 h (TRGS 505)	150 µg/m³ **(1)**
Cadmium und anorganische Cadmium Verbindungen	Time-weighted average exposure limit 8 h (TRGS 900)	0.002 mg/m³ **(2)**
	Der AGW gilt nur für den E-Staub und deckt die nicht-krebserzeugende Wirkung (Nierentoxizität) ab. Die krebserzeugende Wirkung und der entsprechende Eintrag für den AStaub in der TRGS 910 sind zu berücksichtigen	
	Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls.	
Cadmium und CdVerbindungen, als Carc.1A, Carc.1B eingestuft	*Die Konzentrationen beziehen sich auf den Elementgehalt des entsprechenden Metalls*	
	Die Toleranzkonzentration wurde gemäß Nummer 3.2.1 aufgrund einer nicht krebserzeugenden Wirkung festgelegt. Bei Überschreitung gelten die glechen Maßnahmen wie bei Überschreitung des AGW.	
	Für Cadmium und Cadmium-Verbindungen ist ein AGW in der E-Staubfraktion fest-gelegt, siehe hierzu TRGS 900.	
Calciumdihydroxid	Time-weighted average exposure limit 8 h (TRGS 900)	1 mg/m³ **(3)**
Calciumsulfat: Anhydrit (alveolengängige Fraktion)	*vgl. Abschn. IIb*	
Calciumsulfat: Anhydrit (einatembare Fraktion)	*vgl. Abschn. V f) und g)*	
Kieselsäuren, amorphe a) kolloidale amorphe Kieselsäure einschl. pyrogener Kieselsäure und im Naßverfahren hergestellter Kieselsäure (Fällungskieselssäure, Kieselgel) und ungebrannter Kieselgur	*vgl. Abschn. V*	
Kieselsäuren, amorphe	Time-weighted average exposure limit 8 h (TRGS 900)	4 mg/m³ **(4)**
	Kolloidale amorphe Kieselsäure (7631-86-9) einschließlich pyrogener Kieselsäure und im Nassverfahren hergestellter Kieselsäure (Fällungskieselsäure, Kieselgel).	
Mangan und seine anorganischen Verbindungen	Time-weighted average exposure limit 8 h (TRGS 900)	0.02 mg/m³ **(5)**
	Time-weighted average exposure limit 8 h (TRGS 900)	0.2 mg/m³ **(6)**
	Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls.	
	Für Permanganate gilt Spitzenbegrenzung, Überschreitungsfaktor 1(II).	
Zinn und seine anorganischen Verbindungen	*vgl. Abschn. IIb*	
Zinn(IV)-Verbindungen, anorganische	Time-weighted average exposure limit 8 h (TRGS 900)	2 mg/m³ **(4)**
	Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls.	
	Eine Begründung für die Ableitung eines gesundheitsbasierten AGW liegt nicht vor.	

(1) Die RL 98/24/EG legt einen bindenden Luftgrenzwert von 150 µg Blei/m³ fest, der somit als maximale Obergrenze in der Luft am Arbeitsplatz zu betrachten ist. Dieser Wert ist nicht gesundheitsbasiert und entspricht zudem nicht dem Stand von Wissenschaft und Technik. Es besteht keine Korrelation zwischen Luftmesswerten und Wirkungsdaten.
(2) Einatembare Fraktion; UF: 8(II)
(3) Einatembare Fraktion; UF: 2 (I)
(4) Einatembare Fraktion
(5) Alveolengängige Fraktion; UF: 8 (II)
(6) Einatembare Fraktion; UF: 8 (II)

Austria

Aluminium (als Metall) Aluminiumoxid und Aluminiumhydroxid	Tagesmittelwert	10 mg/m³ **(1)**
	Tagesmittelwert	5 mg/m³ **(2)**
	Kurzzeitwert 60(Miw) 2x	10 mg/m³ **(2)**
	Kurzzeitwert 60(Miw) 2x	20 mg/m³ **(1)**
Aluminiumoxid-Rauch	Tagesmittelwert (MAK)	5 mg/m³ **(2)**
	Kurzzeitwert 60(Miw) 2x (MAK)	10 mg/m³ **(2)**
Cadmium und seine Verbindungen *shall apply from 2027-07-12*	Tagesmittelwert (TRK)	0.001 mg/m³ **(3)**
Cadmium und seine Verbindungen *shall apply until 2027-07-11*	Tagesmittelwert (TRK)	0.004 mg/m³ **(3)**
Cadmium und seine Verbindungen *shall apply from 2027-07-12*	Kurzzeitwert 15(Miw) 4x (TRK)	0.004 mg/m³ **(3)**
Cadmium und seine Verbindungen *shall apply until 2027-07-11*	Kurzzeitwert 15(Miw) 4x (TRK)	0.016 mg/m³ **(3)**
Calciumdihydroxid	Tagesmittelwert (MAK)	1 mg/m³ **(1)**
	Kurzzeitwert 5(Mow) 8x (MAK)	4 mg/m³ **(1)**
Calciumsulfat	Tagesmittelwert (MAK)	5 mg/m³ **(2)**
	Kurzzeitwert 60(Miw) 2x (MAK)	10 mg/m³ **(2)**
Mangan und seine anorganischen Verbindungen einschließlich Trimangantetroxid	Tagesmittelwert (MAK)	0.05 mg/m³ **(4)**
	Tagesmittelwert (MAK)	0.2 mg/m³ **(5)**
	Kurzzeitwert 15(Miw) 4x (MAK)	0.16 mg/m³ **(4)**
	Kurzzeitwert 15(Miw) 4x (MAK)	1.6 mg/m³ **(5)**

(1) Einatembare Fraktion
(2) Alveolengängige Fraktion
(3) Einatembare Fraktion; als Cd berechnet
(4) Alveolengängige Fraktion; als Mn berechnet
(5) Einatembare Fraktion; als Mn berechnet

UK

Aluminium oxides inhalable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	10 mg/m³
Aluminium oxides respirable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	4 mg/m³
Arsenic and compounds except arsine (as As)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.1 mg/m³
Cadmium compounds except cadmium oxide fume, cadmium sulphide and cadmium sulphide pigments (as Cd)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.025 mg/m³
Calcium hydroxide (Respirable fraction)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	1 mg/m³
	Short time value (Workplace exposure limit (EH40/2005))	4 mg/m³
Calcium hydroxide	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	5 mg/m³
Copper and compounds: dusts and mists (as Cu)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	1 mg/m³
	Short time value (Workplace exposure limit (EH40/2005))	2 mg/m³
Iron salts (as Fe)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	1 mg/m³
	Short time value (Workplace exposure limit (EH40/2005))	2 mg/m³
Lead other than lead alkyls	Time-weighted average exposure limit 8 h (Occupational exposure limit (Control of lead at work))	0.15 mg/m³
Manganese and its inorganic compounds (as Mn) (Inhalable fraction)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.2 mg/m³
Manganese and its inorganic compounds (as Mn) (Respirable fraction)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.05 mg/m³
Silica, amorphous inhalable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	6 mg/m³
Silica, amorphous respirable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	2.4 mg/m³
Tin compounds, inorganic, except SnH4 (as Sn)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	2 mg/m³
	Short time value (Workplace exposure limit (EH40/2005))	4 mg/m³

USA (TLV-ACGIH)

Aluminium metal and insoluble compounds	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	1 mg/m³ **(1)**
Arsenic and inorganic compounds, as As	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.01 mg/m³
Cadmium and compounds, as Cd	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.002 mg/m³ **(1)**
	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.01 mg/m³
Calcium hydroxide	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	5 mg/m³
Calcium sulfate	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	10 mg/m³ **(2)**
Lead and inorganic compounds, as Pb	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.05 mg/m³
Manganese, elemental and inorganic compounds, as Mn	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.1 mg/m³ **(2)**
Tin and inorganic compounds, excluding Tin hydride and Indium tin oxide, as Sn	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	2 mg/m³ **(2)**

(1) (R): Respirable fraction
(2) (I): Inhalable fraction

b) National biological limit values

If limit values are applicable and available these will be listed below.

Belgium

Plomb et ses composés ioniques (Lood)	sang	70 µg/100ml	

Germany

Blei, anorganischen Bleiverbindungen und bleihaltigen Gemischen (Blei)	Vollblut: keine beschränkung	150 µg/l	Dieser Wert gilt nicht für Beschäftigte im gebärfähigen Alter. Die Regelungen des Mutterschutzgesetzes bleiben unberührt. Beschäftigungsbeschränkungen sind in Abschnitt 7, Verwendungsverbote in Abschnitt 6 aufgeführt.

USA (BEI-ACGIH)

Cadmium and inorganic compounds (cadmium)	Blood: not critical	5 µg/L	Background
Cadmium and inorganic compounds (cadmium)	urine: not critical	5 µg/g creatinine	Background

Lead and inorganic compounds (Lead)	Blood: not critical	200 µg/L	Persons applying this BEI® are encouraged to counsel female workers of child-bearing age about the risk of delivering a child with a PbB over the current CDC reference value.

c) Nationale Akzeptanz- und Toleranzkonzentrationen

Germany

Arsenverbindungen, als Carc. 1A, Carc. 1B eingestuft	Akzeptanzkonzentration (TRGS 910)	0.83 µg/m³	
	Toleranzkonzentration (Risiko 4:1.000) (TRGS 910)	8.3 µg/m³	
Cadmium und CdVerbindungen, als Carc.1A, Carc.1B eingestuft	Akzeptanzkonzentration (TRGS 910)	0.9 µg/m³	
	Toleranzkonzentration (Risiko 4:1.000) (TRGS 910)	2 µg/m³	
Arsenverbindungen als Carc. 1A, Carc. 1B eingestuft	Akzeptanzkonzentration (TRGS 910)	14 µg/L Parameter: S Arsen(III), Arsen(V), Monomethylarsonsäure und Dimethylarsinsäure Untersuchungsmaterial: Urin	Expositionsende bzw. Schichtende, bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten
	Toleranzkonzentration (Risiko 4:1.000) (TRGS 910)	40 µg/L Parameter: S Arsen(III), Arsen(V), Monomethylarsonsäure und Dimethylarsinsäure Untersuchungsmaterial: Urin	Expositionsende bzw. Schichtende, bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten

8.1.2 Sampling methods

Product name	Test	Number
Aluminum & Compounds (as Al)	NIOSH	7013
Arsenic & Compounds (as As)	NIOSH	7900
Cadmium & Cpds (as Cd)	NIOSH	7048
Calciumdihydroxide	NIOSH	7020
Copper Dust and fume	NIOSH	7029
Dialuminiumtrioxide	NIOSH	7013
gel (silica, amorphous)	NIOSH	7501
Iron	OSHA	ID 121
Lead	OSHA	ID 121
Lead	OSHA	ID 125G
Manganese	OSHA	ID 121
Manganese	OSHA	ID 125G
Silica, Amorphous (Respirable)	NIOSH	7501
Sulfites, & Sulfates	NIOSH	6004
Zinc & Cpds (as Zn)	NIOSH	7030

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 Threshold values

DNEL/DMEL - Workers

calcium sulfate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	21.17 mg/m³	
	Acute systemic effects inhalation	5082 mg/m³	

zinc sulphate (anhydrous)

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	1 mg/m³	
	Long-term systemic effects dermal	8.3 mg/kg bw/day	

copper sulphate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	1 mg/m³	
	Long-term local effects inhalation	1 mg/m³	
	Long-term systemic effects dermal	137 mg/kg bw/day	

cadmium sulphate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	4 µg/m³	

manganese sulphate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	0.2 mg/m³	
	Long-term systemic effects dermal	0.004 mg/kg bw/day	

zinc sulphide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	5 mg/m³	
	Long-term systemic effects dermal	83 mg/kg bw/day	

magnesium sulphate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	37.6 mg/m³	
	Long-term systemic effects dermal	21.3 mg/kg bw/day	

aluminium oxide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	3 mg/m³	
	Long-term local effects inhalation	3 mg/m³	

iron sulphide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	8.82 mg/m³	
	Long-term systemic effects dermal	2.5 mg/kg bw/day	

tin oxide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	2 mg/m³	
	Acute systemic effects inhalation	2 mg/m³	
	Long-term systemic effects dermal	5.7 mg/kg bw/day	
	Acute systemic effects dermal	5.7 mg/kg bw/day	

calcium dihydroxide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	1 mg/m³	
	Acute local effects inhalation	4 mg/m³	

DNEL/DMEL - General population

calcium sulfate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	5.29 mg/m³	
	Acute systemic effects inhalation	3811 mg/m³	
	Long-term systemic effects oral	1.52 mg/kg bw/day	
	Acute systemic effects oral	11.4 mg/kg bw/day	

zinc sulphate (anhydrous)

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	1.25 mg/m³	
	Long-term systemic effects dermal	8.3 mg/kg bw/day	
	Long-term systemic effects oral	0.83 mg/kg bw/day	

copper sulphate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects oral	0.041 mg/kg bw/day	
	Acute systemic effects oral	0.082 mg/kg bw/day	

cadmium sulphate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects oral	1 µg/kg bw/day	

manganese sulphate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	0.043 mg/m³	
	Long-term systemic effects dermal	0.002 mg/kg bw/day	

zinc sulphide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	2.5 mg/m³	
	Long-term systemic effects dermal	83 mg/kg bw/day	
	Long-term systemic effects oral	0.83 mg/kg bw/day	

magnesium sulphate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	11.1 mg/m³	
	Long-term systemic effects dermal	12.8 mg/kg bw/day	
	Long-term systemic effects oral	12.8 mg/kg bw/day	

aluminium oxide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	0.75 mg/m³	
	Long-term local effects inhalation	0.75 mg/m³	
	Long-term systemic effects oral	1.32 mg/kg bw/day	

iron sulphide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	2.17 mg/m³	
	Long-term systemic effects dermal	1.25 mg/kg bw/day	
	Long-term systemic effects oral	1.25 mg/kg bw/day	

tin oxide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	6 mg/m³	
	Acute systemic effects inhalation	6 mg/m³	
	Long-term systemic effects dermal	2 mg/kg bw/day	
	Acute systemic effects dermal	2 mg/kg bw/day	
	Long-term systemic effects oral	2 mg/kg bw/day	
	Acute systemic effects oral	2 mg/kg bw/day	

calcium dihydroxide

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	1 mg/m³	
	Acute local effects inhalation	4 mg/m³	

PNEC

calcium sulfate

Compartments	Value	Remark
STP	100 mg/l	

zinc sulphate (anhydrous)

Compartments	Value	Remark
Fresh water	20.6 µg/l	
Marine water	6.1 µg/l	
STP	100 µg/l	
Fresh water sediment	117.8 mg/kg sediment dw	
Marine water sediment	56.5 mg/kg sediment dw	
Soil	35.6 mg/kg soil dw	

copper sulphate

Compartments	Value	Remark
Fresh water	7.8 µg/l	
Marine water	5.2 µg/l	
STP	230 µg/l	
Fresh water sediment	87 mg/kg sediment dw	
Marine water sediment	676 mg/kg sediment dw	
Soil	65 mg/kg soil dw	

cadmium sulphate

Compartments	Value	Remark
Fresh water	0.19 µg/l	
Marine water	1.14 µg/l	
STP	20 µg/l	
Fresh water sediment	1.8 mg/kg sediment dw	
Marine water sediment	0.64 mg/kg sediment dw	
Soil	0.9 mg/kg soil dw	
Oral	0.16 mg/kg food	

manganese sulphate

Compartments	Value	Remark
Fresh water	0.013 mg/l	
Marine water	0 mg/l	
Aqua (intermittent releases)	0.03 mg/l	
STP	56 mg/l	
Fresh water sediment	0.011 mg/kg sediment dw	
Marine water sediment	0.001 mg/kg sediment dw	
Soil	25.1 mg/kg soil dw	

zinc sulphide

Compartments	Value	Remark
Fresh water	20.6 µg/l	
Marine water	6.1 µg/l	
STP	100 µg/l	
Fresh water sediment	117.8 mg/kg sediment dw	
Marine water sediment	56.5 mg/kg sediment dw	
Soil	35.6 mg/kg soil dw	

magnesium sulphate

Compartments	Value	Remark
Fresh water	0.68 mg/l	
Fresh water (intermittent releases)	6.8 mg/l	
Marine water	0.068 mg/l	
Fresh water (intermittent releases)	6.8 mg/l	
STP	10 mg/l	

tin oxide

Compartments	Value	Remark
Fresh water	0.1 mg/l	
Marine water	0.01 mg/l	
Aqua (intermittent releases)	1 mg/l	
STP	100 mg/l	

calcium dihydroxide

Compartments	Value	Remark
Fresh water	0.49 mg/l	
Fresh water (intermittent releases)	0.49 mg/l	
Marine water	0.32 mg/l	
STP	3 mg/l	
Soil	1080 mg/kg soil dw	

8.1.5 Control banding

If applicable and available it will be listed below.

8.2. Exposure controls

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

8.2.1 Appropriate engineering controls

Avoid raising dust. Keep away from naked flames/heat. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

Observe very strict hygiene - avoid contact. Do not eat, drink or smoke during work.

a) Respiratory protection:

Dust production: dust mask with filter type P3. High dust production: self-contained breathing apparatus (EN 136 + EN 137).

b) Hand protection:

Protective gloves against chemicals (EN 374), Gloves always need to be selected in consultation with the supplier after analysing the specific operating conditions. The glove thickness and breakthrough time can vary per manufacturer, type and model of glove. The technical information of the glove manufacturer always needs to be consulted to ensure the most suitable glove is chosen for each task. The table below serves as an indication and is in compliance with norm EN-420 and EN-374 and other norms, that can be concluded from the risk analysis of the specific operation conditions.

Materials	Measured breakthrough time	Thickness	Protection index	Remark
PVC	> 30 minutes	1.5 mm	Class 2	
butyl rubber	> 120 minutes	0.5 mm	Class 4	
viton	> 480 minutes	0.4 mm	Class 6	

c) Eye protection:

Safety glasses (EN 166). In case of dust production: protective goggles (EN 166).

d) Skin protection:

Dustproof clothing (EN 13982).

8.2.3 Environmental exposure controls:

See sections 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Solid
Odour	Mild odour
Odour threshold	Not applicable
Colour	Grey-brown
Particle size	No data available (test not performed)
Explosion limits	No data available (test not performed)
Flammability	Not classified as flammable
Log Kow	Not applicable
Dynamic viscosity	Not applicable (solid)
Kinematic viscosity	Not applicable (solid)
Melting point	No data available (test not performed)
Boiling point	No data available (test not performed)
Relative vapour density	Not applicable (solid)
Vapour pressure	Not applicable (solid)
Solubility	No data available (test not performed)

Relative density	1.8 ; ALP
	1.8 ; BLP
	0.8 - 1.2 ; BuLP
Absolute density	1800 kg/m³ ; ALP
	1800 kg/m³ ; BLP
	800 kg/m³ - 1200 kg/m³ ; BuLP
Decomposition temperature	No data available (test not performed)
Auto-ignition temperature	No data available (test not performed)
Flash point	Not applicable (solid)
pH	< 2 ; ALP
	< 2 ; BLP
	5 ; BuLP

9.2. Other information

Evaporation rate	Not applicable (solid)

SECTION 10: Stability and reactivity

10.1. Reactivity

Acid reaction. Not corrosive to metals.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Precautionary measures

Avoid raising dust. Keep away from naked flames/heat.

10.5. Incompatible materials

No data available.

10.6. Hazardous decomposition products

On heating (>1000°C): release of toxic and corrosive gases/vapours (lead oxides, sulphur oxides, zinc oxides).

SECTION 11: Toxicological information

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

11.1.1 Test results

Acute toxicity

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available

Classification is based on the relevant ingredients

lead(II)sulphate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral			category 4			Annex VI	
Inhalation (dust)			category 4			Annex VI	

calcium sulfate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 420	> 1581 mg/kg bw		Rat (female)	Experimental value	Converted value
Dermal						Data waiving	
Inhalation (dust)	LC50	OECD 403	> 2.61 mg/l air	4 h	Rat (male / female)	Experimental value	Converted value

zinc sulphate (anhydrous)

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 401	1710 mg/kg bw		Rat (male)	Experimental value	
Dermal	LD50	OECD 402	> 2000 mg/kg bw	24 h	Rat (male / female)	Experimental value	

silica, precipitated

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		> 5000 mg/kg		Rat		

barium salts, with the exception of barium sulphate, salts of 1-azo-2-hydroxynaphthalenyl aryl sulphonic acid, and of salts specified elsewhere in this Annex

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral			category 4			Literature study	
Inhalation			category 4			Literature study	

copper sulphate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 401	481 mg/kg		Rat (male / female)	Experimental value	
Dermal	LD50	OECD 402	> 2000 mg/kg	24 h	Rat (male / female)	Experimental value	
Inhalation						Data waiving	

cadmium sulphate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		225 mg/kg bw(Cd 2+)		Rat (male)	Read-across	
Dermal						Data waiving	
Inhalation (aerosol)	LC50		0.056 mg/l(Cd 2+)	4 h	Rat (male / female)	Read-across	

manganese sulphate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		2150 mg/kg		Rat (male / female)	Experimental value	
Dermal						Data waiving	
Inhalation (dust)	LC50	OECD 403	> 4.45 mg/l air	4 h	Rat (male / female)	Experimental value	

iron arsenate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	150 mg/kg bw		Mouse (male / female)	Read-across	
Inhalation (aerosol)	LC50	Equivalent to OECD 403	1.04 mg/l	4 h	Mouse (male / female)	Read-across	
Inhalation			category 3			Annex VI	

zinc sulphide

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	> 5000 mg/kg		Rat (male / female)	Read-across	
Dermal						Data waiving	
Inhalation (dust)	LC50	OECD 403	> 5.41 mg/l	4 h	Rat (male / female)	Read-across	

sulfur

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	EPA OPP 81-1	> 2000 mg/kg		Rat (male / female)	Experimental value	
Dermal	LD50	EPA OPP 81-2	> 2000 mg/kg	24 h	Rat (male / female)	Experimental value	
Inhalation (dust)	LC50	EPA OPP 81-3	> 5.43 mg/l	4 h	Rat (male / female)	Experimental value	

magnesium sulphate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 425	> 2000 mg/kg bw		Rat (male / female)	Experimental value	
Dermal	LD50	OECD 402	> 2000 mg/kg	24 h	Rat (male / female)	Read-across	
Inhalation						Data waiving	

aluminium oxide

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	> 15900 mg/kg bw		Rat (male / female)	Experimental value	
Dermal						Data waiving	
Inhalation (aerosol)	LC50	Equivalent to OECD 403	> 2.3 mg/l air	4 h	Rat (male / female)	Experimental value	

iron sulphide

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 425	> 2000 mg/kg bw		Rat (female)	Experimental value	
Dermal	LD50	OECD 402	> 2000 mg/kg bw	24 h	Rat (male / female)	Experimental value	
Inhalation						Data waiving	

calcium dihydroxide

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 425	> 2000 mg/kg bw		Rat (female)	Experimental value	
Dermal	LD50	OECD 402	> 2500 mg/kg bw	24 h	Rabbit (male / female)	Experimental value	
Inhalation (dust)	LC50	OECD 436	> 6.04 mg/l	4 h	Rat (male / female)	Experimental value	

Conclusion

Harmful if swallowed.

Harmful if inhaled.

Not classified as acute toxic in contact with skin

Corrosion/irritation

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available

Classification is based on the relevant ingredients

calcium sulfate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405		24; 48; 72 hours	Rabbit	Experimental value	Single treatment
Skin	Not irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	

zinc sulphate (anhydrous)

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Highly irritating	OECD 405		24; 48; 72 hours	Rabbit	Experimental value of similar product	Single treatment without rinsing
Eye	Serious eye damage; category 1					Annex VI	
Skin	Not irritating	OECD 404	4 h	1; 24; 48; 72 hours	Rabbit	Experimental value	

copper sulphate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Serious eye damage	OECD 405		24; 48; 72 hours	Rabbit	Experimental value	Hydrate form
Skin	Not irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Read-across	Hydrate form
Skin	Irritating; category 2					Annex VI	

Classification and labelling do not correspond to those of Annex VI

cadmium sulphate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Not applicable (in vitro test)	Not irritating	OECD 437			Bovine eye (in vitro)	Experimental value	
Not applicable (in vitro test)	Not irritating	OECD 439	15 minutes		Reconstructed human epidermis	Experimental value	

manganese sulphate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Serious eye damage	OECD 405		24; 48 hours	Rabbit	Experimental value	Single treatment
Skin	Not irritating	OECD 404	4 h	24; 72 hours	Rabbit	Experimental value	

Classification of this substance according to Annex VI is debatable as it does not correspond to the conclusion from the test

zinc sulphide

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Slightly irritating	EU Method B.5	24 h	1; 24; 48; 72 hours	Rabbit	Read-across	Single treatment with rinsing
Skin	Not irritating	Patch test	5 day(s)		Rabbit	Read-across	

sulfur

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405		24; 48; 72 hours	Rabbit	Experimental value	
Skin	Irritating	EPA OPP 81-5	4 h	1; 24; 48; 72; 168 hours	Rabbit	Experimental value	

magnesium sulphate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405		24; 48; 72 hours	Rabbit	Read-across	
Not applicable (in vitro test)	Not irritating	EU Method B.46	5 minutes	15 minutes	Reconstructed human epidermis	Read-across	

aluminium oxide

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	Equivalent to OECD 405		24; 48; 72 hrs; 4; 7 days	Rabbit	Experimental value	
Skin	Not irritating	Equivalent to OECD 404	24 h	24; 48; 72 hours	Rabbit	Experimental value	

iron sulphide

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405		24; 48; 72 hours	Rabbit	Experimental value	
Skin	Not irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	

calcium dihydroxide

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Serious eye damage	OECD 405	1 h	1; 24; 48; 72 hours	Rabbit	Experimental value	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Inhalation	Irritating; STOT SE cat.3					Literature study	

Conclusion

Causes serious eye damage.
Not classified as irritating to the skin
Not classified as irritating to the respiratory system

Respiratory or skin sensitisation

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available

Judgement is based on the relevant ingredients

calcium sulfate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	OECD 406			Guinea pig (male)	Experimental value	

zinc sulphate (anhydrous)

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal (on the ears)	Not sensitizing	Equivalent to OECD 429			Mouse (female)	Experimental value	

copper sulphate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	OECD 406			Guinea pig (male / female)	Experimental value	Hydrate form

cadmium sulphate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Not applicable (in vitro test)	Limited positive test result	OECD 442D				Experimental value	
Inhalation						Data waiving	

manganese sulphate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	Equivalent to OECD 429			Mouse (female)	Read-across	

zinc sulphide

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	OECD 406			Guinea pig (female)	Read-across	

sulfur

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	OECD 406		24; 48 hours	Guinea pig (male / female)	Experimental value	

magnesium sulphate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal (on the ears)	Not sensitizing	OECD 429			Mouse (female)	Experimental value	

aluminium oxide

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal	Not sensitizing				Guinea pig (male)	Experimental value	
Intratracheal instillation	Not sensitizing				Mouse (male)	Experimental value	

iron sulphide

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal (on the ears)	Not sensitizing	OECD 429			Mouse (female)	Experimental value	

calcium dihydroxide

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	OECD 429			Mouse (female)	Experimental value	

Conclusion

Not classified as sensitizing for skin

Not classified as sensitizing for inhalation

Specific target organ toxicity

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available

Classification is based on the relevant ingredients

lead(II)sulphate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Unknown			STOT RE cat.2					Annex VI
Oral (diet)	Dose level		500 ppm	Blood	Change in the haemogramme/blood composition	7 weeks (daily)	Bovine (male)	Experimental value

calcium sulfate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (stomach tube)	NOAEL	OECD 422	79 mg/kg bw/day		No effect	35 day(s)	Rat (male)	Experimental value
Oral (stomach tube)	LOAEL	OECD 422	237 mg/kg bw/day		Change in the haemogramme/blood composition	35 day(s)	Rat (male)	Experimental value
Oral (stomach tube)	NOAEL	OECD 422	790 mg/kg bw/day		No effect	41 day(s) - 43 day(s)	Rat (female)	Experimental value
Dermal								Data waiving

zinc sulphate (anhydrous)

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (diet)	NOEL	OECD 408	234 mg/kg bw/day - 243 mg/kg bw/day		No effect	13 weeks (daily)	Rat (male / female)	Experimental value
Oral (diet)	LOEL	OECD 408	2486 mg/kg bw/day - 2514 mg/kg bw/day	Blood	Haematological changes	13 weeks (daily)	Rat (male / female)	Experimental value
Dermal								Data waiving
Inhalation (aerosol)	NOAEL	Subchronic toxicity test			No effect	16 weeks (6h / day, 3 days / week)	Rat (male)	Experimental value

copper sulphate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (diet)	NOAEL	Equivalent to EU Method B.26	1000 ppm		No effect	13 weeks (7 days / week)	Rat (male / female)	Experimental value
Oral (diet)	LOAEL	Equivalent to EU Method B.26	2000 ppm	Liver	Enlargement/ affection of the liver	13 weeks (7 days / week)	Rat (male / female)	Experimental value
Dermal								Data waiving
Inhalation (aerosol)	NOAEL	OECD 412	≥ 2 mg/m³ air	Lungs	No effect	4 weeks (6h / day, 5 days / week)	Rat (male / female)	Experimental value of similar product

cadmium sulphate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Unknown			STOT RE cat.1					Annex VI
Dermal								Data waiving

manganese sulphate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (diet)	NOAEL	Other	1700 mg/kg bw/day		No effect	13 weeks (daily)	Rat (male)	Read-across
Oral (diet)	NOAEL	Other	2000 mg/kg bw/day		No effect	13 weeks (daily)	Rat (female)	Read-across
Dermal								Data waiving
Inhalation (aerosol)		Subchronic toxicity test		Brain	Haematological changes		Monkey (male)	Experimental value

zinc sulphide

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (diet)	NOAEL	OECD 408	13.26 mg/kg bw/day		No effect	13 week(s)	Rat (male / female)	Read-across

sulfur

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (stomach tube)	NOAEL	OECD 408	1000 mg/kg bw/day		No effect	90 day(s)	Rat (male / female)	Experimental value
Dermal	NOAEL local effects	OECD 410	400 mg/kg bw/day	Skin	No effect	4 weeks (6h / day, 5 days / week)	Rat (male / female)	Experimental value
Dermal	NOAEL systemic effects	OECD 410	1000 mg/kg bw/day		No adverse systemic effects	4 weeks (6h / day, 5 days / week)	Rat (male / female)	Experimental value
Inhalation								Data waiving

magnesium sulphate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (diet)	NOAEL	Equivalent to OECD 453	256 mg/kg bw/day - 284 mg/kg bw/day		No effect	52 week(s)	Rat (male / female)	Read-across
Dermal								Data waiving
Inhalation								Data waiving

aluminium oxide

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (drinking water)	NOAEL	Equivalent to OECD 452	322.5 mg/kg bw/day		No effect	51 week(s)	Rat (male / female)	Read-across
Oral (drinking water)	LOAEL	Equivalent to OECD 452	1075 mg/kg bw/day		Neurotoxic effects	51 week(s)	Rat (male / female)	Read-across
Inhalation (dust)	NOAEC	Equivalent to OECD 413	70 mg/m³ air		No effect	26 weeks (6h / day, 5 days / week) - 52 weeks (6h / day, 5 days / week)	Rat	Experimental value

iron sulphide

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (stomach tube)	NOAEL	OECD 422	125 mg/kg bw/day		No effect	42 day(s)	Rat (male)	Experimental value
Oral (stomach tube)	NOAEL	OECD 422	250 mg/kg bw/day		No effect	54 day(s)	Rat (female)	Experimental value
Dermal								Data waiving
Inhalation								Data waiving

calcium dihydroxide

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (stomach tube)	NOAEL	OECD 422	1000 mg/kg bw/day		No effect		Rat (male / female)	Experimental value
Dermal								Data waiving
Inhalation (dust)	NOAEC	OECD 412	0.107 mg/l		No effect	2 weeks (6h / day, 5 days / week)	Rat (male / female)	Experimental value

Conclusion

May cause damage to organs (blood system, central nervous system, lungs, kidneys) through prolonged or repeated exposure.

Mutagenicity (in vitro)

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available

Classification is based on the relevant ingredients

lead(II)sulphate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)		Experimental value	

calcium sulfate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria (S. typhimurium and E. coli)	No effect	Experimental value	
Negative with metabolic activation, negative without metabolic activation	OECD 476	Mouse (lymphoma L5178Y cells)	No effect	Experimental value	

zinc sulphate (anhydrous)

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)		Experimental value	

copper sulphate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria (S.typhimurium)		Experimental value	

cadmium sulphate

Result	Method	Test substrate	Effect	Value determination	Remark
Positive		Human lung fibroblasts		Experimental value	
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)		Read-across	

manganese sulphate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 473	Human lymphocytes	No effect	Read-across	
Negative	OECD 471	Bacteria (S.typhimurium)	No effect	Read-across	
Negative with metabolic activation, negative without metabolic activation	OECD 476	Mouse (lymphoma L5178Y cells)	No effect	Read-across	

zinc sulphide

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)		Read-across	
Negative with metabolic activation, negative without metabolic activation	OECD 481	Yeast (S. cerevisiae)		Read-across	

sulfur

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 473	Chinese hamster ovary (CHO)		Experimental value	
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria (S.typhimurium)		Experimental value	

magnesium sulphate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 476	Mouse (lymphoma L5178Y cells)		Experimental value	

aluminium oxide

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 476	Mouse (lymphoma L5178Y cells)		Read-across	
Positive without metabolic activation	Micronucleus test	Human lymphocytes		Read-across	
Positive without metabolic activation	Equivalent to OECD 473	Human lymphocytes		Read-across	

iron sulphide

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria (S. typhimurium and E. coli)		Experimental value	

calcium dihydroxide

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria (S. typhimurium and E. coli)		Experimental value	
Negative with metabolic activation, negative without metabolic activation	OECD 473	Human lymphocytes		Experimental value	

Mutagenicity (in vivo)

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available

Classification is based on the relevant ingredients

calcium sulfate

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Oral (diet))	OECD 474		Mouse (male)		Experimental value

zinc sulphate (anhydrous)

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Intraperitoneal)	Micronucleus test	2 dose(s)/24-hour interval	Mouse (male / female)		Experimental value

copper sulphate

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Oral (stomach tube))	EU Method B.12	2 dose(s)/24-hour interval	Mouse (male / female)		Experimental value

cadmium sulphate

Result	Method	Exposure time	Test substrate	Organ	Value determination
Positive					Annex VI

manganese sulphate

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Oral (stomach tube))	OECD 474		Mouse (female)		Read-across

sulfur

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Oral (stomach tube))	OECD 474	2 dose(s)/24-hour interval	Mouse (male / female)	Bone marrow	Experimental value

aluminium oxide

Result	Method	Exposure time	Test substrate	Organ	Value determination
Ambiguous (Oral (stomach tube))	OECD 474		Rat (female)		Read-across

iron sulphide

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Intraperitoneal)	OECD 474	2 dose(s)/24-hour interval	Mouse (male)	Bone marrow	Read-across

Conclusion

May cause genetic defects.

Carcinogenicity

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available

Classification is based on the relevant ingredients

calcium sulfate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral (diet)	NOAEL	Carcinogenic toxicity study	256 mg/kg bw/day	104 weeks (daily)	Rat (male)	No carcinogenic effect		Experimental value
Oral (diet)	NOAEL	Carcinogenic toxicity study	284 mg/kg bw/day	104 weeks (daily)	Rat (female)	No carcinogenic effect		Experimental value

zinc sulphate (anhydrous)

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral (drinking water)	NOAEL	Carcinogenic toxicity study	> 22000 mg/l	52 weeks (daily)	Mouse (male / female)	No carcinogenic effect		Experimental value

cadmium sulphate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	LOAEL	Carcinogenic toxicity study	0.09 mg/m³ air	18 months (daily, 22h / day)	Rat (male / female)	Tumor formation	Lungs	Experimental value

manganese sulphate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral (diet)	NOAEL	Carcinogenic toxicity study	615 mg/kg bw	103 weeks (daily)	Rat (male)	No carcinogenic effect		Experimental value
Oral (diet)	NOAEL	Carcinogenic toxicity study	715 mg/kg bw	103 weeks (daily)	Rat (female)	No carcinogenic effect		Experimental value

iron arsenate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral (drinking water)	Dose level	Carcinogenic toxicity study	42.5 ppm - 85 ppm	8 days (gestation, daily) - 18 days (gestation, daily)	Mouse (male / female)	Tumor formation	Various organs	Read-across

sulfur

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Unknown								Data waiving

magnesium sulphate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Unknown								Data waiving

aluminium oxide

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (dust)	NOAEC	Equivalent to OECD 413	50 mg/m³ air	26 weeks (6h / day, 5 days / week)	Rat	No carcinogenic effect		Experimental value

iron sulphide

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral (drinking water)	NOAEL	OECD 451	320 mg/kg bw/day - 336 mg/kg bw/day	104 week(s)	Rat (male / female)	No carcinogenic effect		Experimental value

calcium dihydroxide

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral (drinking water)	NOAEL	Carcinogenic toxicity study	2150 mg/kg bw/day - 2280 mg/kg bw/day	104 week(s)	Rat (male / female)	No carcinogenic effect		Read-across

Conclusion

May cause cancer by inhalation.

Reproductive toxicity

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available

Classification is based on the relevant ingredients

lead(II)sulphate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity			category 1A					Annex VI
Effects on fertility			category 2					Annex VI

calcium sulfate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	1600 mg/kg bw/day	10 day(s)	Rat	No effect	General	Experimental value
Maternal toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	1600 mg/kg bw/day	10 days (gestation, daily)	Rat	No effect		Experimental value
Effects on fertility (Oral (stomach tube))	NOAEL	OECD 422	790 mg/kg bw/day	2 week(s)	Rat (male / female)	No effect		Experimental value

zinc sulphate (anhydrous)

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	Developmental toxicity study	42.5 mg/kg bw/day	10 day(s)	Rat	No effect		Experimental value
Maternal toxicity (Oral (stomach tube))	NOAEL	Developmental toxicity study	42.5 mg/kg bw/day	10 day(s)	Rat	No effect		Experimental value
Effects on fertility (Oral (diet))	Dose level		4000 ppm		Rat (male)	Adverse effect on sperm	Male reproductive organ	Experimental value

copper sulphate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	OECD 414	6 mg/kg bw/day	22 days (gestation, daily)	Rabbit	No effect		Experimental value of similar product
Maternal toxicity (Oral (stomach tube))	NOAEL	OECD 414	6 mg/kg bw/day	22 days (gestation, daily)	Rabbit	No effect		Experimental value of similar product
Effects on fertility (Oral (diet))	NOAEL	EPA OPPTS 870.3800	1000 ppm - 1500 ppm		Rat (male / female)	No effect		Experimental value

cadmium sulphate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (drinking water))	NOAEL	Developmental toxicity study	5 ppm	14 days (gestation, daily)	Rat	No effect		Read-across
	LOAEL	Developmental toxicity study	50 ppm	14 days (gestation, daily)	Rat	Fetotoxicity	Foetus	Read-across
Maternal toxicity (Oral (drinking water))	NOAEL	Developmental toxicity study	5 ppm	14 days (gestation, daily)	Rat	No effect		Read-across
	LOAEL	Developmental toxicity study	50 ppm	14 days (gestation, daily)	Rat	Maternal toxicity		Read-across
Effects on fertility (Oral (stomach tube))	NOAEL		1 mg/kg bw/day	9 weeks (daily)	Rat (female)	No effect		Read-across
	LOAEL		10 mg/kg bw/day	9 weeks (daily)	Rat (female)	Reduction in the number of pregnancies		Read-across

manganese sulphate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (diet))	NOAEL	Developmental toxicity study		8 week(s) - 10 week(s)	Rat	No effect		Experimental value
Effects on fertility (Oral (drinking water))				12 week(s)	Rat (male)	No effect	Reproductive organs	Experimental value

zinc sulphide

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	Developmental toxicity study	42.5 mg/kg bw/day	10 days (gestation, daily)	Rat	No effect		Read-across
Maternal toxicity (Oral (stomach tube))	NOAEL	Developmental toxicity study	42.5 mg/kg bw/day	10 days (gestation, daily)	Rat	No effect		Read-across
Effects on fertility (Oral (diet))	Dose level		4000 ppm	30 day(s) - 32 day (s)	Rat (male)	Reduction in sperm motility	Male reproductive organ	Read-across

sulfur

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity								Data waiving
Effects on fertility								Data waiving

magnesium sulphate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	OECD 422	≥ 1500 mg/kg bw/day	28 day(s) - 53 day (s)	Rat	No effect		Read-across
Maternal toxicity (Oral (stomach tube))	NOAEL	OECD 422	≥ 1500 mg/kg bw/day	28 day(s) - 53 day (s)	Rat	No effect		Read-across
Effects on fertility (Oral (stomach tube))	NOAEL	OECD 422	≥ 1500 mg/kg bw/day	4 week(s)	Rat (male / female)	No effect		Read-across

aluminium oxide

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	266 mg/kg bw/day	10 day(s)	Rat	No effect		Read-across
Maternal toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	266 mg/kg bw/day	10 day(s)	Rat	No effect		Read-across
Effects on fertility (Oral (drinking water))	NOAEL (P)	Equivalent to OECD 426	3225 mg/kg bw/day	> 52 weeks (daily)	Rat (male / female)	No effect		Read-across
Effects on fertility (Oral (stomach tube))	NOAEL	OECD 422	1000 mg/kg bw	28 day(s) - 53 day (s)	Rat (male / female)	No effect		Read-across

iron sulphide

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	OECD 422	500 mg/kg bw/day	42 day(s) - 54 day (s)	Rat	No effect		Experimental value
Maternal toxicity (Oral (stomach tube))	NOAEL	OECD 422	500 mg/kg bw/day	42 day(s) - 54 day (s)	Rat	No effect		Experimental value
Effects on fertility (Oral (stomach tube))	NOAEL	OECD 422	500 mg/kg bw/day	42 day(s) - 54 day (s)	Rat (male / female)	No effect	Reproductive organs	Experimental value

calcium dihydroxide

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	≥ 440 mg/kg bw/day	10 days (gestation, daily)	Mouse	No effect		Read-across
Maternal toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	≥ 440 mg/kg bw/day	10 days (gestation, daily)	Mouse	No effect		Read-across
Effects on fertility (Oral (stomach tube))	NOEL	OECD 422	1000 mg/kg bw/day		Rat (male / female)	No effect		Experimental value

Conclusion

May damage fertility.
May damage the unborn child.

Toxicity other effects

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available

Chronic effects from short and long-term exposure

NYRSTAR LEACH PRODUCT

Gastrointestinal complaints. Abdominal pain. Nausea. Loss of appetite. Loss of weight. Feeling of weakness. Paleness. Metal taste. Discolouration of the gums. Affection of the renal tissue. Change in urine output. Change in urine composition. Headache. Dizziness. Impairment of the nervous system. Brain affection. Excited/restless. Behavioural disturbances. Emotional instability. Sleeplessness. Impaired memory. Mental confusion. Delusions. Myasthenia. Coordination disorders. Disturbed motor response. Disturbed tactile sensibility. Tremor. Cramps/uncontrolled muscular contractions. Paralysis. Change in the haemogramme/blood composition. Possible premature birth.

11.2. Information on other hazards

No evidence of endocrine disrupting properties

SECTION 12: Ecological information

12.1. Toxicity

NYRSTAR LEACH PRODUCT

No (test)data on the mixture available
Classification is based on the relevant ingredients

lead(II)sulphate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	TLm		7.48 mg/l	96 h	Pimephales promelas			Literature study; Lead ion
Acute toxicity crustacea	LC50		0.3 mg/l	48 h	Daphnia magna			Literature study; Lead ion
Toxicity algae and other aquatic plants	EC50		0.14 mg/l		Selenastrum capricornutum			Literature study; Lead ion

calcium sulfate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		2980 mg/l	96 h	Lepomis macrochirus			Literature study
Acute toxicity crustacea	LC50	OECD 202	> 79 mg/l	48 h	Daphnia magna		Fresh water	Experimental value; GLP
Toxicity algae and other aquatic plants	NOEC	OECD 201	2.1 g/l	72 h	Pseudokirchneriella subcapitata			Experimental value; Greater than the water solubility
Toxicity aquatic micro-organisms	NOEC	OECD 209	1000 mg/l	3 h	Activated sludge			Experimental value; Nominal concentration

zinc sulphate (anhydrous)

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		330 µg/l - 780 µg/l	95 h	Pimephales promelas	Static system	Fresh water	Experimental value; Lethal
Acute toxicity crustacea	EC50	OECD 202	1.4 mg/l - 2.5 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; Locomotor effect
Toxicity algae and other aquatic plants	IC50	OECD 201	136 µg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value; Growth rate
	NOEC	OECD 201	24 µg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value; Growth rate
Long-term toxicity fish	NOEC	OECD 210	56 µg/l - 61 µg/l	116 day(s)	Salmo trutta	Flow-through system	Fresh water	Experimental value
Long-term toxicity aquatic crustacea	NOEC		31 µg/l - 208 µg/l	50 day(s)	Daphnia magna	Semi-static system	Fresh water	Experimental value; Reproduction
Toxicity aquatic micro-organisms	EC50	Equivalent to OECD 209	5.2 mg/l	3 h	Activated sludge	Static system	Fresh water	Experimental value; Respiration

silica, precipitated

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	EC0	OECD 203	≥ 10000 mg/l	96 h	Brachydanio rerio			Literature study
Acute toxicity crustacea	EC0	OECD 202	≥ 1000 mg/l	24 h	Daphnia magna			Literature study

copper sulphate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		38.4 µg/l	96 h	Pimephales promelas	Flow-through system	Fresh water	Read-across; Cu ion
Acute toxicity crustacea	EC50	OECD 202	109 µg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; Locomotor effect
Toxicity algae and other aquatic plants	EC50	OECD 201	0.047 mg/l	96 h	Chlamydomonas reinhardtii	Flow-through system	Fresh water	Experimental value; Growth
	NOEC	Equivalent to OECD 201	22 µg/l	10 day(s)	Chlamydomonas reinhardtii	Flow-through system	Fresh water	Experimental value; Growth rate
Long-term toxicity fish	NOEC	Equivalent to OECD 204	33 µg/l	330 day(s)	Pimephales promelas	Flow-through system	Fresh water	Experimental value; Growth rate
Long-term toxicity aquatic crustacea	NOEC		12.6 µg/l	21 day(s)	Daphnia magna	Flow-through system	Fresh water	Experimental value; Growth

cadmium sulphate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	Other	2.5 mg/l	96 h	Jordanella floridae	Flow-through system	Fresh water	Read-across
	LC50		748 µg/l	4 day(s)	Carassius auratus	Flow-through system	Fresh water	Read-across; Nominal concentration
Acute toxicity crustacea	LC50	EPA 600/4-78-012	38 µg/l	48 h	Daphnia magna	Static system	Fresh water	Read-across; Lethal
Toxicity algae and other aquatic plants	EC50	OECD 201	23 µg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Read-across; Biomass
	NOEC	OECD 201	2.4 µg/l	3 day(s)	Pseudokirchneriella subcapitata	Static system	Fresh water	Read-across; Cell numbers
Long-term toxicity fish	NOEC		1.7 µg/l	36 month(s)	Salvelinus fontinalis	Flow-through system	Fresh water	Read-across; Growth rate
Long-term toxicity aquatic crustacea	NOEC		10 µg/l	7 day(s)	Ceriodaphnia dubia	Static renewal	Fresh water	Read-across; Reproduction
Toxicity aquatic micro-organisms	NOEC	OECD 209	200 µg/l	3 h	Activated sludge	Static system	Fresh water	Experimental value; Respiration

manganese sulphate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		3.17 mg/l	96 h	Oncorhynchus mykiss	Flow-through system	Fresh water	Weight of evidence; Manganese ion
Acute toxicity crustacea	LC50		9.8 mg/l	48 h	Daphnia magna	Static system	Fresh water	Read-across; Manganese ion
Toxicity algae and other aquatic plants	EC50	OECD 201	61 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Experimental value; Growth rate
	NOEC	OECD 201	1 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Experimental value; Growth rate
Long-term toxicity fish	NOEC	Equivalent to OECD 210	0.76 mg/l	65 day(s)	Oncorhynchus mykiss	Flow-through system	Fresh water	Experimental value; Manganese ion
Long-term toxicity aquatic crustacea	NOEC		0.02 mg/l	20 day(s)	Crassostrea gigas	Static system	Salt water	Experimental value; Growth
Toxicity aquatic micro-organisms	EC50	OECD 209	> 1000 mg/l	3 h	Activated sludge	Static system	Fresh water	Experimental value; Respiration

iron arsenate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	Equivalent to OECD 203	28 mg/l	96 h	Cyprinodon variegatus	Static system	Salt water	Read-across
Acute toxicity crustacea	LC50	APHA	3.26 mg/l	48 h	Daphnia pulex	Static system	Fresh water	Read-across
Toxicity algae and other aquatic plants	ErC50	Equivalent to OECD 201	0.159 mg/l	96 h	Scenedesmus obliquus	Semi-static system	Fresh water	Read-across

zinc sulphide

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	> 0.25 mg/l	96 h	Danio rerio	Static system	Fresh water	Experimental value; GLP
Acute toxicity crustacea	LC50	OECD 202	> 29 µg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; GLP
Toxicity algae and other aquatic plants	ErC50	OECD 201	> 13 µg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Experimental value; GLP
Long-term toxicity fish								Data waiving
Long-term toxicity aquatic crustacea								Data waiving
Toxicity aquatic micro-organisms								Data waiving

sulfur

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC0	OECD 203	> 5 µg/l	96 h	Oncorhynchus mykiss	Semi-static system	Fresh water	Experimental value; Greater than the water solubility
Acute toxicity crustacea	EC50	OECD 202	> 5 µg/l	48 h	Daphnia magna	Semi-static system	Fresh water	Experimental value; Greater than the water solubility
Toxicity algae and other aquatic plants	NOEC	OECD 201	> 5 µg/l	72 h	Algae	Semi-static system	Fresh water	Experimental value; Growth rate
Long-term toxicity aquatic crustacea	NOEC	OECD 211	> 2.5 µg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Experimental value; Reproduction

No classification for aquatic toxicity since the toxicity limits are above the water solubility

magnesium sulphate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	EPA 600/4-90/027	680 mg/l	96 h	Pimephales promelas	Static system	Fresh water	Read-across; Lethal
	LC50		15500 mg/l	96 h	Gambusia affinis	Static system		
Acute toxicity crustacea	LC50	EPA 600/4-90/027	720 mg/l	48 h	Daphnia magna	Static system	Fresh water	Read-across; GLP
	EC50		1700 mg/l	24 h	Daphnia magna			
Toxicity algae and other aquatic plants	EC50		2700 mg/l	18 day(s)	Chlorella vulgaris	Static system	Fresh water	Read-across; Cell numbers
	EC10		≥ 100 mg/l	18 day(s)	Chlorella vulgaris	Static system	Fresh water	Estimated value; Cell numbers
Toxicity aquatic micro-organisms	EC50		84 g/l	30 minutes	Photobacterium phosphoreum			Experimental value

aluminium oxide

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		> 100 mg/l	96 h	Salmo trutta			Literature study
Acute toxicity crustacea	EC50		> 100 mg/l	48 h	Daphnia magna			Literature study

iron sulphide

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		> 10000 mg/l	96 h	Gambusia affinis	Static system		Experimental value; Nominal concentration
Acute toxicity crustacea								Data waiving
Toxicity algae and other aquatic plants								Data waiving
Long-term toxicity fish								Data waiving
Long-term toxicity aquatic crustacea								Data waiving
Toxicity aquatic micro-organisms								Data waiving

calcium dihydroxide

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	50.6 mg/l	96 h	Oncorhynchus mykiss	Static system	Fresh water	Experimental value; Lethal
Acute toxicity crustacea	EC50	OECD 202	49.1 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; Estimated value
Toxicity algae and other aquatic plants	ErC50	OECD 201	184.57 mg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value; Nominal concentration
	NOEC	OECD 201	48 mg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value; Growth rate
Long-term toxicity fish								Data waiving
Long-term toxicity aquatic crustacea	NOEC		32 mg/l	14 day(s)	Crangon sp.	Semi-static system	Salt water	Experimental value; Growth
Toxicity aquatic micro-organisms	EC50	OECD 209	300.4 mg/l	3 h	Activated sludge	Static system	Fresh water	Experimental value; Respiration

Conclusion

Very toxic to aquatic life.

Very toxic to aquatic life with long lasting effects.

12.2. Persistence and degradability

manganese sulphate

Biodegradation water

Method	Value	Duration	Value determination
			Data waiving

Biodegradation soil

Method	Value	Duration	Value determination
			Data waiving

zinc sulphide

Biodegradation water

Method	Value	Duration	Value determination
			Data waiving

Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
			Data waiving

iron sulphide

Biodegradation water

Method	Value	Duration	Value determination
			Data waiving

Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
			Data waiving

Conclusion

Water

No test data of component(s) available

12.3. Bioaccumulative potential

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Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable			

lead(II)sulphate

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available in the literature			

diiron zinc tetraoxide

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

calcium sulfate

Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (inorganic)			

zinc sulphate (anhydrous)

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF		0.4 - 7.51	45 day(s)	Channa punctatus	Experimental value

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

silica, precipitated

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

copper sulphate

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available in the literature			

cadmium sulphate

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF		1385; Fresh weight	92 day(s)	Salmo salar	Read-across

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

manganese sulphate

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
					Data waiving

BCF other aquatic organisms

Parameter	Method	Value	Duration	Species	Value determination
					Data waiving

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

iron arsenate

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

zinc sulphide

BCF other aquatic organisms

Parameter	Method	Value	Duration	Species	Value determination
BCF		38 - 28960; Fresh weight	28 day(s)	Palaemon elegans	Experimental value

Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable			

sulfur

Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (inorganic)			

magnesium sulphate

Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (inorganic)			

aluminium oxide

Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (inorganic)			

iron sulphide

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
					Data waiving

Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (inorganic)			

tin oxide

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

Iron hydroxide

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

calcium dihydroxide

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

Conclusion

Contains bioaccumulative component(s)

12.4. Mobility in soil

cadmium sulphate

(log) Koc

Parameter	Method	Value	Value determination
			Data waiving

zinc sulphide

(log) Koc

Parameter	Method	Value	Value determination
			Data waiving

sulfur

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v2.0	1.1	Estimated value

iron sulphide

(log) Koc

Parameter	Method	Value	Value determination
			Data waiving

Conclusion

No (test)data on mobility of the component(s) available

12.5. Results of PBT and vPvB assessment

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances.

12.6. Endocrine disrupting properties

No evidence of endocrine disrupting properties

12.7. Other adverse effects

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Greenhouse gases

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014)

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

Water ecotoxicity pH

pH shift

zinc sulphate (anhydrous)

Water ecotoxicity pH

pH shift

copper sulphate

Groundwater

Groundwater pollutant

Water ecotoxicity pH

pH shift

cadmium sulphate

Groundwater

Groundwater pollutant

Water ecotoxicity pH

pH shift

manganese sulphate

Water ecotoxicity pH

pH shift

zinc sulphide

Groundwater

Groundwater pollutant

magnesium sulphate

Groundwater

Groundwater pollutant

aluminium oxide

Water ecotoxicity pH

pH shift

calcium dihydroxide

Water ecotoxicity pH

pH shift

SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

13.1. Waste treatment methods

13.1.1 Provisions relating to waste

European Union

Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.
Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).
01 03 07* (wastes from physical and chemical processing of metalliferous minerals: other wastes containing hazardous substances from physical and chemical processing of metalliferous minerals). Depending on branch of industry and production process, also other waste codes may be applicable.

13.1.2 Disposal methods

Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Do not discharge into drains or the environment. Dispose of at authorized waste collection point. Do not discharge into surface water (Directive 2000/60/EC, Council Decision 2455/2001/EC).

13.1.3 Packaging/Container

European Union

Waste material code packaging (Directive 2008/98/EC).
15 01 10* (packaging containing residues of or contaminated by dangerous substances).

SECTION 14: Transport information

Road (ADR)

14.1. UN number

UN number	3077

14.2. UN proper shipping name

Proper shipping name	environmentally hazardous substance, solid, n.o.s. (lead(II) sulphate; zinc sulphate (anhydrous))

14.3. Transport hazard class(es)

Hazard identification number	90
Class	9
Classification code	M7

14.4. Packing group

Packing group	III
Labels	 9

14.5. Environmental hazards

Environmentally hazardous substance mark	 yes

14.6. Special precautions for user

Special provisions	274
Special provisions	335
Special provisions	375
Special provisions	601
Limited quantities	Combination packagings: not more than 5 kg per inner packaging for solids. A package shall not weigh more than 30 kg (gross mass).

Rail (RID)

14.1. UN number

UN number	3077

14.2. UN proper shipping name

Proper shipping name	environmentally hazardous substance, solid, n.o.s. (lead(II) sulphate; zinc sulphate (anhydrous))

14.3. Transport hazard class(es)

Hazard identification number	90
Class	9
Classification code	M7

14.4. Packing group

Packing group	III

Labels	 9

14.5. Environmental hazards

Environmentally hazardous substance mark	 yes

14.6. Special precautions for user

Special provisions	274
Special provisions	335
Special provisions	375
Special provisions	601
Limited quantities	Combination packagings: not more than 5 kg per inner packaging for solids. A package shall not weigh more than 30 kg (gross mass).

Inland waterways (ADN)

14.1. UN number/ID number

UN number/ID number	3077

14.2. UN proper shipping name

Proper shipping name	environmentally hazardous substance, solid, n.o.s. (lead(II) sulphate; zinc sulphate (anhydrous))

14.3. Transport hazard class(es)

Class	9
Classification code	M7

14.4. Packing group

Packing group	III
Labels	 9

14.5. Environmental hazards

Environmentally hazardous substance mark	 yes

14.6. Special precautions for user

Special provisions	274
Special provisions	335
Special provisions	375
Special provisions	601
Limited quantities	Combination packagings: not more than 5 kg per inner packaging for solids. A package shall not weigh more than 30 kg (gross mass).

Sea (IMDG/IMSBC)

14.1. UN number

UN number	3077

14.2. UN proper shipping name

Proper shipping name	environmentally hazardous substance, solid, n.o.s. (lead(II) sulphate; zinc sulphate (anhydrous))

14.3. Transport hazard class(es)

Class	9

14.4. Packing group

Packing group	III
Labels	 9

14.5. Environmental hazards

Marine pollutant	P

Environmentally hazardous substance mark	 yes

14.6. Special precautions for user

Special provisions	274
Special provisions	335
Special provisions	966
Special provisions	967
Special provisions	969
Limited quantities	Combination packagings: not more than 5 kg per inner packaging for solids. A package shall not weigh more than 30 kg (gross mass).

14.7. Maritime transport in bulk according to IMO instruments

Annex II of MARPOL 73/78	Not applicable
MARPOL Annex V	In accordance with the International Maritime Organization's (IMO) amendments to MARPOL Annex V, with effect from 1 January 2013 onwards, this material is classified as harmful to the marine environment
IMSBC-code	Cargo group A and B – MHB (TX, CR)
Bulk Cargo Shipping Name	LEACH RESIDUE CONTAINING LEAD

Air (ICAO-TI/IATA-DGR)

14.1. UN number/ID number

UN number/ID number	3077

14.2. UN proper shipping name

Proper shipping name	environmentally hazardous substance, solid, n.o.s. (lead(II) sulphate; zinc sulphate (anhydrous))

14.3. Transport hazard class(es)

Class	9

14.4. Packing group

Packing group	III
Labels	 9

14.5. Environmental hazards

Environmentally hazardous substance mark	 yes

14.6. Special precautions for user

Special provisions	A158
Special provisions	A179
Special provisions	A197
Special provisions	A215
Special provisions	A97

Passenger and cargo transport

Limited quantities: maximum net quantity per packaging	30 kg G

SECTION 15: Regulatory information

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

European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
	Not applicable (inorganic)

Directive 2012/18/EU (Seveso III)

Threshold values under normal circumstances

Substance or category	Low tier (tonnes)	Top tier (tonnes)	Group	For this substance or mixture the summation rule has to be applied for:
E1 Hazardous to the Aquatic Environment in Category Acute 1 or Chronic 1	100	200	None	Eco-toxicity

Prior informed consent (PIC)

Contains component(s) listed in Annex I of Regulation (EU) No 649/2012: Part 1 - List of chemicals subject to export notification procedure

European drinking water standards (98/83/EC and 2020/2184)

lead(II)sulphate

Parameter	Parametric value	Note	Reference
Lead	5 µg/l		Listed in Annex I, Part B, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.
Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.
Lead	10 µg/l		Listed in Annex I, Part D, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

calcium sulfate

Parameter	Parametric value	Note	Reference
Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

zinc sulphate (anhydrous)

Parameter	Parametric value	Note	Reference
Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

copper sulphate

Parameter	Parametric value	Note	Reference
Copper	2 mg/l		Listed in Annex I, Part B, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.
Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

cadmium sulphate

Parameter	Parametric value	Note	Reference
Cadmium	5 µg/l		Listed in Annex I, Part B, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.
Pesticides	0.1 µg/l		Listed in Annex I, Part B, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.
Pesticides — Total	0.5 µg/l		Listed in Annex I, Part B, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.
Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

manganese sulphate

Parameter	Parametric value	Note	Reference
Manganese	50 µg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.
Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

iron arsenate

Parameter	Parametric value	Note	Reference
Arsenic	10 µg/l		Listed in Annex I, Part B, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.
Iron	200 µg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

magnesium sulphate

Parameter	Parametric value	Note	Reference
Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

aluminium oxide

Parameter	Parametric value	Note	Reference
Aluminium	200 µg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

Iron hydroxide

Parameter	Parametric value	Note	Reference
Iron	200 µg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 on the quality of water intended for human consumption.

REACH Candidate list

Contains component(s) included in candidate list of substances of very high concern (SVHC) for authorisation (Article 59 of Regulation (EC) No 1907/2006)

REACH Annex XVII - Restriction

Contains component(s) subject to restrictions of Annex XVII of Regulation (EC) No 1907/2006: restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

	Designation of the substance, of the group of substances or of the mixture	Conditions of restriction
· lead(II)sulphate	Lead sulphates; PbSO 4	Shall not be placed on the market, or used, as substances or in mixtures, where the substance or mixture is intended for use as paint. However, Member States may, in accordance with the provisions of International Labour Organization (ILO) Convention 13, permit the use on their territory of the substance or mixture for the restoration and maintenance of works of art and historic buildings and their interiors, as well as the placing on the market for such use. Where a Member State makes use of this derogation, it shall inform the Commission thereof.
· iron arsenate	Arsenic compounds	1.Shall not be placed on the market, or used, as substances or in mixtures where the substance or mixture is intended for use to prevent the fouling by micro-organisms, plants or animals of: — the hulls of boats, — cages, floats, nets and any other appliances or equipment used for fish or shellfish farming, — any totally or partly submerged appliances or equipment. 2. Shall not be placed on the market, or used, as substances or in mixtures where the substance or mixture is intended for use in the treatment of industrial waters, irrespective of their use. 3. Shall not be used in the preservation of wood. Furthermore, wood so treated shall not be placed on the market. 4. By way of derogation from paragraph 3: a) Relating to the substances and mixtures for the preservation of wood: these may only be used in industrial installations using vacuum or pressure to impregnate wood if they are solutions of inorganic compounds of the copper, chromium, arsenic (CCA) type C and if they are authorised in accordance with Article 5(1) of Directive 98/8/EC. Wood so treated shall not be placed on the market before fixation of the preservative is completed. b) Wood treated with CCA solution in accordance with point (a) may be placed on the market for professional and industrial use provided that the structural integrity of the wood is required for human or livestock safety and skin contact by the general public during its service life is unlikely: — as structural timber in public and agricultural buildings, office buildings, and industrial premises, — in bridges and bridgework, — as constructional timber in freshwater areas and brackish waters, for example jetties and bridges, — as noise barriers, — in avalanche control, — in highway safety fencing and barriers, — as debarked round conifer livestock fence posts, — in earth retaining structures, — as electric power transmission and telecommunications poles, — as underground railway sleepers. c) Without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that all treated wood placed on the market is individually labelled “For professional and industrial installation and use only, contains arsenic”. In addition, all wood placed on the market in packs shall also bear a label stating “Wear gloves when handling this wood. Wear a dust mask and eye protection when cutting or otherwise crafting this wood. Waste from this wood shall be treated as hazardous by an authorised undertaking”. d) Treated wood referred to under point a) shall not be used: — in residential or domestic constructions, whatever the purpose, — in any application where there is a risk of repeated skin contact, — in marine waters, — for agricultural purposes other than for livestock fence posts and structural uses in accordance with point (b), — in any application where the treated wood may come into contact with intermediate or finished products intended for human and/or animal consumption. 5. Wood treated with arsenic compounds that was in use in the Community before 30 September 2007, or that was placed on the market in accordance with paragraph 4 may remain in place and continue to be used until it reaches the end of its service life. 6. Wood treated with CCA type C that was in use in the Community before 30 September 2007, or that was placed on the market in accordance with paragraph 4: — may be used or reused subject to the conditions pertaining to its use listed under points 4 (b), (c) and (d), — may be placed on the market subject to the conditions pertaining to its use listed under points 4(b), (c) and (d). 7. Member States may allow wood treated with other types of CCA solutions that was in use in the Community before 30 September 2007: — to be used or reused subject to the conditions pertaining to its use listed under points 4 (b), (c) and (d), — to be placed on the market subject to the conditions pertaining to its use listed under points 4(b), (c) and (d).
· cadmium sulphate	Cadmium and its compounds	For the purpose of this entry, the codes and chapters indicated in square brackets are the codes and chapters of the tariff and statistical nomenclature of Common Customs Tariff as established by Council Regulation (EEC) No 2658/87 (OJ L 256, 7.9.1987, p. 42). 1. Shall not be used in mixtures and articles produced from synthetic organic polymers (hereafter referred to as plastic material) such as: — polymers or copolymers of vinyl chloride (PVC) [3904 10] [3904 21] — polyurethane (PUR) [3909 50] — low-density polyethylene (LDPE), with the exception of low-density polyethylene used for the production of coloured masterbatch [3901 10] — cellulose acetate (CA) [3912 11]

			— cellulose acetate butyrate (CAB) [3912 11] — epoxy resins [3907 30] — melamine-formaldehyde (MF) resins [3909 20] — urea-formaldehyde (UF) resins [3909 10] — unsaturated polyesters (UP) [3907 91] — polyethylene terephthalate (PET) [3907 60] — polybutylene terephthalate (PBT) — transparent/general-purpose polystyrene [3903 11] — acrylonitrile methylmethacrylate (AMMA) — cross-linked polyethylene (VPE) — high-impact polystyrene — polypropylene (PP) [3902 10] — high-density polyethylene (HDPE) [3901 20] — acrylonitrile butadiene styrene (ABS) [3903 30] — poly(methyl methacrylate) (PMMA) [3906 10]. Mixtures and articles produced from plastic material shall not be placed on the market if the concentration of cadmium (expressed as Cd metal) is equal to or greater than 0,01 % by weight of the plastic material. By way of derogation, the second subparagraph shall not apply to articles placed on the market before 10 December 2011. The first and second subparagraphs apply without prejudice to Council Directive 94/62/EC (OJ L 365, 31.12.1994, p. 10) and acts adopted on its basis. By 19 November 2012, in accordance with Article 69, the Commission shall ask the European Chemicals Agency to prepare a dossier conforming to the requirements of Annex XV in order to assess whether the use of cadmium and its compounds in plastic material, other than that listed in subparagraph 1, should be restricted. 2. Shall not be used or placed on the market in paints with codes [3208] [3209] in a concentration (expressed as Cd metal) equal to or greater than 0,01 % by weight. For paints with codes [3208] [3209] with a zinc content exceeding 10 % by weight of the paint, the concentration of cadmium (expressed as Cd metal) shall not be equal to or greater than 0,1 % by weight. Painted articles shall not be placed on the market if the concentration of cadmium (expressed as Cd metal) is equal to or greater than 0,1 % by weight of the paint on the painted article. 3. By way of derogation, paragraphs 1 and 2 shall not apply to articles coloured with mixtures containing cadmium for safety reasons. 4. By way of derogation, paragraph 1, second subparagraph shall not apply to: — mixtures produced from PVC waste, hereinafter referred to as “recovered PVC”, — mixtures and articles containing recovered PVC if their concentration of cadmium (expressed as Cd metal) does not exceed 0,1 % by weight of the plastic material in the following rigid PVC applications: (a) profiles and rigid sheets for building applications; (b) doors, windows, shutters, walls, blinds, fences, and roof gutters; (c) decks and terraces; (d) cable ducts; (e) pipes for non-drinking water if the recovered PVC is used in the middle layer of a multilayer pipe and is entirely covered with a layer of newly produced PVC in compliance with paragraph 1 above. Suppliers shall ensure, before the placing on the market of mixtures and articles containing recovered PVC for the first time, that these are visibly, legibly and indelibly marked as follows: “Contains recovered PVC” or with the following pictogram: Pictogram recovered PVC In accordance with Article 69 of this Regulation, the derogation granted in paragraph 4 will be reviewed, in particular with a view to reducing the limit value for cadmium and to reassess the derogation for the applications listed in points (a) to (e), by 31 December 2017. 5. For the purpose of this entry, “cadmium plating” means any deposit or coating of metallic cadmium on a metallic surface. Shall not be used for cadmium plating metallic articles or components of the articles used in the following sectors/applications: a) equipment and machinery for: — food production [8210] [8417 20] [8419 81] [8421 11] [8421 22] [8422] [8435] [8437] [8438] [8476 11] — agriculture [8419 31] [8424 81] [8432] [8433] [8434] [8436] — cooling and freezing [8418] — printing and book-binding [8440] [8442] [8443] (b) equipment and machinery for the production of: — household goods [7321] [8421 12] [8450] [8509] [8516] — furniture [8465] [8466] [9401] [9402] [9403] [9404] — sanitary ware [7324] — central heating and air conditioning plant [7322] [8403] [8404] [8415] In any case, whatever their use or intended final purpose, the placing on the market of cadmium-plated articles or components of such articles used in the sectors/applications listed in points (a) and (b) above and of articles manufactured in the sectors listed in point (b) above is prohibited. 6. The provisions referred to in paragraph 5 shall also be applicable to cadmium-plated articles or components of such articles when used in the sectors/applications listed in points (a) and (b) below and to articles manufactured in the sectors listed in (b) below: (a) equipment and machinery for the production of: — paper and board [8419 32] [8439] [8441] textiles and clothing [8444] [8445] [8447] [8448] [8449] [8451] [8452] (b) equipment and machinery for the production of: — industrial handling equipment and machinery [8425] [8426] [8427] [8428] [8429] [8430] [8431] — road and agricultural vehicles [chapter 87] — rolling stock [chapter 86] — vessels [chapter 89].

		7. However, the restrictions in paragraphs 5 and 6 shall not apply to: — articles and components of the articles used in the aeronautical, aerospace, mining, offshore and nuclear sectors whose applications require high safety standards and in safety devices in road and agricultural vehicles, rolling stock and vessels, — electrical contacts in any sector of use, where that is necessary to ensure the reliability required of the apparatus on which they are installed. 8. Shall not be used in brazing fillers in concentration equal to or greater than 0,01 % by weight. Brazing fillers shall not be placed on the market if the concentration of cadmium (expressed as Cd metal) is equal to or greater than 0,01 % by weight. For the purpose of this paragraph brazing shall mean a joining technique using alloys and undertaken at temperatures above 450 °C. 9. By way of derogation, paragraph 8 shall not apply to brazing fillers used in defence and aerospace applications and to brazing fillers used for safety reasons. 10. Shall not be used or placed on the market if the concentration is equal to or greater than 0,01 % by weight of the metal in: (i) metal beads and other metal components for jewellery making; (ii) metal parts of jewellery and imitation jewellery articles and hair accessories, including: — bracelets, necklaces and rings, — piercing jewellery, — wrist-watches and wrist-wear, — brooches and cufflinks. 11. By way of derogation, paragraph 10 shall not apply to articles placed on the market before 10 December 2011 and jewellery more than 50 years old on 10 December 2011
· cadmium sulphate · iron arsenate	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.	Without prejudice to the other parts of this Annex the following shall apply to entries 28 to 30: 1. Shall not be placed on the market, or used, — as substances, — as constituents of other substances, or, — in mixtures, for supply to the general public when the individual concentration in the substance or mixture is equal to or greater than: — either the relevant specific concentration limit specified in Part 3 of Annex VI to Regulation (EC) No 1272/2008, or, — the relevant generic concentration limit specified in Part 3 of Annex I of Regulation (EC) No 1272/2008. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of such substances and mixtures is marked visibly, legibly and indelibly as follows: “Restricted to professional users”. 2. By way of derogation, paragraph 1 shall not apply to: (a) medicinal or veterinary products as defined by Directive 2001/82/EC and Directive 2001/83/EC; (b) cosmetic products as defined by Directive 76/768/EEC; (c) the following fuels and oil products: — motor fuels which are covered by Directive 98/70/EC, — mineral oil products intended for use as fuel in mobile or fixed combustion plants, — fuels sold in closed systems (e.g. liquid gas bottles); (d) artists’ paints covered by Regulation (EC) No 1272/2008; (e) the substances listed in Appendix 11, column 1, for the applications or uses listed in Appendix 11, column 2. Where a date is specified in column 2 of Appendix 11, the derogation shall apply until the said date; (f) devices covered by Regulation (EU) 2017/745.
· cadmium sulphate	Substances which are classified as germ cell mutagen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 3 or Appendix 4, respectively.	Without prejudice to the other parts of this Annex the following shall apply to entries 28 to 30: 1. Shall not be placed on the market, or used, — as substances, — as constituents of other substances, or, — in mixtures, for supply to the general public when the individual concentration in the substance or mixture is equal to or greater than: — either the relevant specific concentration limit specified in Part 3 of Annex VI to Regulation (EC) No 1272/2008, or, — the relevant generic concentration limit specified in Part 3 of Annex I of Regulation (EC) No 1272/2008. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of such substances and mixtures is marked visibly, legibly and indelibly as follows: “Restricted to professional users”. 2. By way of derogation, paragraph 1 shall not apply to: (a) medicinal or veterinary products as defined by Directive 2001/82/EC and Directive 2001/83/EC; (b) cosmetic products as defined by Directive 76/768/EEC; (c) the following fuels and oil products: — motor fuels which are covered by Directive 98/70/EC, — mineral oil products intended for use as fuel in mobile or fixed combustion plants, — fuels sold in closed systems (e.g. liquid gas bottles); (d) artists’ paints covered by Regulation (EC) No 1272/2008; (e) the substances listed in Appendix 11, column 1, for the applications or uses listed in Appendix 11, column 2. Where a date is specified in column 2 of Appendix 11, the derogation shall apply until the said date; (f) devices covered by Regulation (EU) 2017/745.
· lead(II)sulphate · cadmium sulphate	Substances which are classified as reproductive toxicant category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No	Without prejudice to the other parts of this Annex the following shall apply to entries 28 to 30: 1. Shall not be placed on the market, or used,

	1272/2008 and are listed in Appendix 5 or Appendix 6, respectively.	— as substances, — as constituents of other substances, or, — in mixtures, for supply to the general public when the individual concentration in the substance or mixture is equal to or greater than: — either the relevant specific concentration limit specified in Part 3 of Annex VI to Regulation (EC) No 1272/2008, or, — the relevant generic concentration limit specified in Part 3 of Annex I of Regulation (EC) No 1272/2008. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of such substances and mixtures is marked visibly, legibly and indelibly as follows: “Restricted to professional users”. 2. By way of derogation, paragraph 1 shall not apply to: (a) medicinal or veterinary products as defined by Directive 2001/82/EC and Directive 2001/83/EC; (b) cosmetic products as defined by Directive 76/768/EEC; (c) the following fuels and oil products: — motor fuels which are covered by Directive 98/70/EC, — mineral oil products intended for use as fuel in mobile or fixed combustion plants, — fuels sold in closed systems (e.g. liquid gas bottles); (d) artists’ paints covered by Regulation (EC) No 1272/2008; (e) the substances listed in Appendix 11, column 1, for the applications or uses listed in Appendix 11, column 2. Where a date is specified in column 2 of Appendix 11, the derogation shall apply until the said date; (f) devices covered by Regulation (EU) 2017/745.
· lead(II)sulphate	Lead and its compounds	1. Shall not be placed on the market or used in any individual part of jewellery articles if the concentration of lead (expressed as metal) in such a part is equal to or greater than 0,05 % by weight. 2. For the purposes of paragraph 1: (i) "jewellery articles" shall include jewellery and imitation jewellery articles and hair accessories, including: (a) bracelets, necklaces and rings; (b) piercing jewellery; (c) wrist watches and wrist-wear; (d) brooches and cufflinks; (ii) "any individual part" shall include the materials from which the jewellery is made, as well as the individual components of the jewellery articles. 3. Paragraph 1 shall also apply to individual parts when placed on the market or used for jewellery-making. 4. By way of derogation, paragraph 1 shall not apply to: (a) crystal glass as defined in Annex I (categories 1, 2, 3 and 4) to Council Directive 69/493/EEC (*); (b) internal components of watch timepieces inaccessible to consumers; (c) non-synthetic or reconstructed precious and semiprecious stones (CN code 7103, as established by Regulation (EEC) No 2658/87), unless they have been treated with lead or its compounds or mixtures containing these substances; (d) enamels, defined as vitrifiable mixtures resulting from the fusion, vitrification or sintering of minerals melted at a temperature of at least 500 °C. (*) OJ L 326, 29.12.1969, p. 36. 5. By way of derogation, paragraph 1 shall not apply to jewellery articles placed on the market for the first time before 9 October 2013 and jewellery articles produced before 10 December 1961. 6. By 9 October 2017, the Commission shall re-evaluate paragraphs 1 to 5 of this entry in the light of new scientific information, including the availability of alternatives and the migration of lead from the articles referred to in paragraph 1 and, if appropriate, modify this entry accordingly. 7. Shall not be placed on the market or used in articles supplied to the general public, if the concentration of lead (expressed as metal) in those articles or accessible parts thereof is equal to or greater than 0,05 % by weight, and those articles or accessible parts thereof may, during normal or reasonably foreseeable conditions of use, be placed in the mouth by children. That limit shall not apply where it can be demonstrated that the rate of lead release from such an article or any such accessible part of an article, whether coated or uncoated, does not exceed 0,05 µg/cm2 per hour (equivalent to 0,05 µg/g/h), and, for coated articles, that the coating is sufficient to ensure that this release rate is not exceeded for a period of at least two years of normal or reasonably foreseeable conditions of use of the article. For the purposes of this paragraph, it is considered that an article or accessible part of an article may be placed in the mouth by children if it is smaller than 5 cm in one dimension or has a detachable or protruding part of that size. 8. By way of derogation, paragraph 7 shall not apply to: (a) jewellery articles covered by paragraph 1; (b) crystal glass as defined in Annex I (categories 1, 2, 3 and 4) to Directive 69/493/EEC; (c) non-synthetic or reconstructed precious and semi-precious stones (CN code 7103 as established by Regulation (EEC) No 2658/87) unless they have been treated with lead or its compounds or mixtures containing these substances; (d) enamels, defined as vitrifiable mixtures resulting from the fusion, vitrification or sintering of mineral melted at a temperature of at least 500 °C; (e) keys and locks, including padlocks; (f) musical instruments; (g) articles and parts of articles comprising brass alloys, if the concentration of lead (expressed as metal) in the brass alloy does not exceed 0,5 % by weight; (h) the tips of writing instruments; (i) religious articles;

			(j) portable zinc-carbon batteries and button cell batteries; (k) articles within the scope of: (i) Directive 94/62/EC; (ii) Regulation (EC) No 1935/2004; (iii) Directive 2009/48/EC of the European Parliament and of the Council (*); (iv) Directive 2011/65/EU of the European Parliament and of the Council (**) 9. By 1 July 2019, the Commission shall re-evaluate paragraphs 7 and 8(e), (f), (i) and (j) of this entry in the light of new scientific information, including the availability of alternatives and the migration of lead from the articles referred to in paragraph 7, including the requirement on coating integrity, and, if appropriate, modify this entry accordingly. 10. By way of derogation paragraph 7 shall not apply to articles placed on the market for the first time before 1 June 2016. (*) Directive 2009/48/EC of the European Parliament and of the Council of 18 June 2009 on the safety of toys (OJ L 170, 30.6.2009, p. 1). (**) Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (OJ L 174, 1.7.2011, p. 88). 11. Doing either of the following acts after 15 February 2023 in or within 100 metres of wetlands is prohibited: (a) discharging gunshot containing a concentration of lead (expressed as metal) equal to or greater than 1 % by weight; (b) carrying any such gunshot where this occurs while out wetland shooting or as part of going wetland shooting. For the purposes of the first subparagraph: (a) “within 100 metres of wetlands” means within 100 metres outward from any outer boundary point of a wetland; (b) “wetland shooting” means shooting in or within 100 metres of wetlands; (c) if a person is found carrying gunshot in or within 100 metres of wetlands while out shooting or as part of going shooting, the shooting concerned shall be presumed to be wetland shooting unless that person can demonstrate that it was some other type of shooting. The restriction laid down in the first subparagraph shall not apply in a Member State if that Member State notifies the Commission in accordance with paragraph 12 that it intends to make use of the option granted by that paragraph. 12. If at least 20 % in total of the territory, excluding the territorial waters, of a Member State are wetlands, that Member State may, in place of the restriction laid down in the first subparagraph of paragraph 11, prohibit the following acts throughout the whole of its territory from 15 February 2024: (a) the placing on the market of gunshot containing a concentration of lead (expressed as metal) equal to or greater than 1 % by weight; (b) the discharging of any such gunshot; (c) carrying any such gunshot while out shooting or as part of going shooting. Any Member State intending to make use of the option granted by the first subparagraph shall notify the Commission of this intention by 15 August 2021. The Member State shall communicate the text of the national measures adopted by it to the Commission without delay and in any event by 15 August 2023. The Commission shall make publicly available without delay any such notices of intention and texts of national measures received by it. 13. For the purposes of paragraphs 11 and 12: (a) “wetlands” means areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6 metres; (b) “gunshot” means pellets used or intended for use in a single charge or cartridge in a shotgun; (c) “shotgun” means a smooth-bore gun, excluding airguns; (d) “shooting” means any shooting with a shotgun; (e) “carrying” means any carrying on the person or carrying or transporting by any other means; (f) in determining whether a person found with gunshot is carrying gunshot “as part of going shooting”: (i) regard shall be had to all the circumstances of the case; (ii) the person found with the gunshot need not necessarily be the same person as the person shooting. 14. Member States may maintain national provisions for protection of the environment or human health in force on 15 February 2021 and restricting lead in gunshot more severely than provided for in paragraph 11. The Member State shall communicate the text of those national provisions to the Commission without delay. The Commission shall make publicly available without delay any such texts of national provisions received by it. 15. Shall not be placed on the market or used in articles produced from polymers or copolymers of vinyl chloride (‘PVC’), if the concentration of lead is equal to or greater than 0,1 % by weight of the PVC material. 16. Paragraph 15 shall apply with effect from 29 November 2024. 17. By way of derogation, paragraph 15 shall not apply to PVC articles containing recovered flexible PVC until 28 May 2025. 18. By way of derogation, paragraph 15 shall not apply to the following PVC articles containing recovered rigid PVC until 28 May 2033, if the concentration of lead is lower than 1,5 % by weight of the recovered rigid PVC: (a) profiles and sheets for exterior applications in buildings and civil engineering works, excluding decks and terraces; (b) profiles and sheets for decks and terraces, provided that the recovered PVC is used in a middle layer and is entirely covered with a layer of PVC or other material for which the concentration of lead is lower than 0,1 % by weight; (c) profiles and sheets for use in concealed spaces or voids in buildings and civil engineering works (where they are inaccessible during normal use, excluding

		maintenance, for example, cable ducts); (d) profiles and sheets for interior building applications, provided that the entire surface of the profile or sheet facing the occupied areas of a building after installation is produced using PVC or other material for which the concentration of lead is lower than 0,1 % by weight; (e) multi-layer pipes (excluding pipes for drinking water), provided that the recovered PVC is used in a middle layer and is entirely covered with a layer of PVC or other material for which the concentration of lead is lower than 0,1 % by weight; (f) fittings, excluding fittings for pipes for drinking water. From 28 May 2026, rigid PVC recovered from the categories of articles referred to in points (a) to (d) shall only be used for the production of new articles of any of those categories. Suppliers of PVC articles containing recovered rigid PVC with a concentration of lead equal to or greater than 0,1 % by weight of the PVC material shall ensure, before placing those articles on the market, that they are visibly, legibly and indelibly marked with the statement: "Contains ≥ 0,1 % lead". Where the marking cannot be provided on the article due to the nature of the article, it shall be on the packaging of the article. Suppliers of PVC articles containing recovered rigid PVC shall submit to national enforcement authorities upon request documentary evidence to substantiate the claims on the recovered origin of the PVC in those articles. Certificates issued by schemes to provide proof of traceability and recycled content, such as those developed according to EN 15343:2007 or equivalent recognised standards, may be used to substantiate such claims for PVC articles produced in the Union. Claims made on the recovered origin of the PVC in imported articles shall be accompanied by a certificate that provides equivalent proof of traceability and recycled content, issued by an independent third party. By 28 May 2028, the Commission shall review this paragraph in light of new scientific information and, if appropriate, modify it accordingly. 19. By way of derogation, paragraph 15 shall not apply to: (a) PVC-silica separators in lead acid batteries, until 28 May 2033; (b) articles covered by paragraph 1, in accordance with paragraphs 2 to 5, and by paragraph 7 in accordance with paragraphs 8 and 10; (c) articles within the scope of: (i) Regulation (EC) No 1935/2004; (ii) Directive 2011/65/EU; (iii) Directive 94/62/EC; (iv) Directive 2009/48/EC. 20. By way of derogation, paragraph 15 shall not apply to PVC articles placed on the market until 28 November 2024.
· cadmium sulphate	The substances listed in column 1 of the Table in Appendix 12	1. Shall not be placed on the market after 1 November 2020 in any of the following: (a) clothing or related accessories; (b) textiles other than clothing which, under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing; (c) footwear; if the clothing, related accessory, textile other than clothing or footwear is for use by consumers and the substance is present in a concentration, measured in homogeneous material, equal to or greater than that specified for that substance in Appendix 12. 2. By way of derogation, in relation to the placing on the market of formaldehyde [CAS No 50-00-0] in jackets, coats or upholstery, the relevant concentration for the purposes of paragraph 1 shall be 300 mg/kg during the period between 1 November 2020 and 1 November 2023. The concentration specified in Appendix 12 shall apply thereafter. 3. Paragraph 1 shall not apply to: (a) clothing, related accessories or footwear, or parts of clothing, related accessories or footwear, made exclusively of natural leather, fur or hide; (b) non-textile fasteners and non-textile decorative attachments; (c) second-hand clothing, related accessories, textiles other than clothing or footwear (d) wall-to-wall carpets and textile floor coverings for indoor use, rugs and runners. 4. Paragraph 1 shall not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 of the European Parliament and of the Council (*) or Regulation (EU) 2017/745 of the European Parliament and of the Council (**). 5. Paragraph 1(b) shall not apply to disposable textiles. 'Disposable textiles' means textiles that are designed to be used only once or for a limited time and are not intended for subsequent use for the same or a similar purpose. 6. Paragraphs 1 and 2 shall apply without prejudice to the application of any stricter restrictions set out in this Annex or in other applicable Union legislation. 7. The Commission shall review the exemption in paragraph 3(d) and, if appropriate, modify that point accordingly. (*) Regulation (EU) 2016/425 of the European Parliament and of the Council of of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC (OJ L 81, 31.3.2016, p. 51). (**) Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (OJ L 117, 5.5.2017, p. 1).
· iron arsenate	The substances listed in column 1 of the Table in Appendix 12	1. Shall not be placed on the market after 1 November 2020 in any of the following: (a) clothing or related accessories; (b) textiles other than clothing which, under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing; (c) footwear; if the clothing, related accessory, textile other than clothing or footwear is for use by consumers and the substance is present in a concentration, measured in homogeneous material, equal to or greater than that specified for that substance in Appendix 12. 2. By way of derogation, in relation to the placing on the market of formaldehyde [CAS No 50-00-0] in jackets, coats or upholstery, the relevant concentration for the purposes of

		paragraph 1 shall be 300 mg/kg during the period between 1 November 2020 and 1 November 2023. The concentration specified in Appendix 12 shall apply thereafter. 3. Paragraph 1 shall not apply to: (a) clothing, related accessories or footwear, or parts of clothing, related accessories or footwear, made exclusively of natural leather, fur or hide; (b) non-textile fasteners and non-textile decorative attachments; (c) second-hand clothing, related accessories, textiles other than clothing or footwear (d) wall-to-wall carpets and textile floor coverings for indoor use, rugs and runners. 4. Paragraph 1 shall not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 of the European Parliament and of the Council (*) or Regulation (EU) 2017/745 of the European Parliament and of the Council (**). 5. Paragraph 1(b) shall not apply to disposable textiles. 'Disposable textiles' means textiles that are designed to be used only once or for a limited time and are not intended for subsequent use for the same or a similar purpose. 6. Paragraphs 1 and 2 shall apply without prejudice to the application of any stricter restrictions set out in this Annex or in other applicable Union legislation. 7. The Commission shall review the exemption in paragraph 3(d) and, if appropriate, modify that point accordingly. (*) Regulation (EU) 2016/425 of the European Parliament and of the Council of of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC (OJ L 81, 31.3.2016, p. 51). (**) Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (OJ L 117, 5.5.2017, p. 1).
· lead(II)sulphate	The substances listed in column 1 of the Table in Appendix 12	1. Shall not be placed on the market after 1 November 2020 in any of the following: (a) clothing or related accessories; (b) textiles other than clothing which, under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing; (c) footwear; if the clothing, related accessory, textile other than clothing or footwear is for use by consumers and the substance is present in a concentration, measured in homogeneous material, equal to or greater than that specified for that substance in Appendix 12. 2. By way of derogation, in relation to the placing on the market of formaldehyde [CAS No 50-00-0] in jackets, coats or upholstery, the relevant concentration for the purposes of paragraph 1 shall be 300 mg/kg during the period between 1 November 2020 and 1 November 2023. The concentration specified in Appendix 12 shall apply thereafter. 3. Paragraph 1 shall not apply to: (a) clothing, related accessories or footwear, or parts of clothing, related accessories or footwear, made exclusively of natural leather, fur or hide; (b) non-textile fasteners and non-textile decorative attachments; (c) second-hand clothing, related accessories, textiles other than clothing or footwear (d) wall-to-wall carpets and textile floor coverings for indoor use, rugs and runners. 4. Paragraph 1 shall not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 of the European Parliament and of the Council (*) or Regulation (EU) 2017/745 of the European Parliament and of the Council (**). 5. Paragraph 1(b) shall not apply to disposable textiles. 'Disposable textiles' means textiles that are designed to be used only once or for a limited time and are not intended for subsequent use for the same or a similar purpose. 6. Paragraphs 1 and 2 shall apply without prejudice to the application of any stricter restrictions set out in this Annex or in other applicable Union legislation. 7. The Commission shall review the exemption in paragraph 3(d) and, if appropriate, modify that point accordingly. (*) Regulation (EU) 2016/425 of the European Parliament and of the Council of of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC (OJ L 81, 31.3.2016, p. 51). (**) Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (OJ L 117, 5.5.2017, p. 1).
· zinc sulphate (anhydrous) · copper sulphate · cadmium sulphate · iron arsenate · sulfur	Substances falling within one or more of the following points: (a) substances classified as any of the following in Part 3 of Annex VI to Regulation (EC) No 1272/2008: — carcinogen category 1A, 1B or 2, or germ cell mutagen category 1A, 1B or 2, but excluding any such substances classified due to effects only following exposure by inhalation — reproductive toxicant category 1A, 1B or 2 but excluding any such substances classified due to effects only following exposure by inhalation — skin sensitiser category 1, 1A or 1B — skin corrosive category 1, 1A, 1B or 1C or skin irritant category 2 — serious eye damage category 1 or eye irritant category 2 (b) substances listed in Annex II to Regulation (EC) No 1223/2009 of the European Parliament and of the Council (c) substances listed in Annex IV to	Mixtures for tattooing purposes are subject to the restrictions of Regulation (EU) 2020/2081

	Regulation (EC) No 1223/2009 for which a condition is specified in at least one of the columns g, h and i of the table in that Annex (d) substances listed in Appendix 13 to this Annex. The ancillary requirements in paragraphs 7 and 8 of column 2 of this entry apply to all mixtures for use for tattooing purposes, whether or not they contain a substance falling within points (a) to (d) of this column of this entry.	

National legislation Belgium

NYRSTAR LEACH PRODUCT

Agents cancérigènes, mutagènes et reprotoxiques et aux agents possédant des propriétés perturbant le système endocrinien (Code du bien-être au travail, Livre VI, titre 2)	cancérigène catégorie 1A ou 1B selon CLP, n.s.a.
	mutagène catégorie 1A ou 1B selon CLP, n.s.a.
	reprotoxique catégorie 1A ou 1B selon CLP, n.s.a.

lead(II)sulphate

Agents cancérigènes, mutagènes et reprotoxiques et aux agents possédant des propriétés perturbant le système endocrinien (Code du bien-être au travail, Livre VI, titre 2)	reprotoxique catégorie 1A ou 1B selon CLP, n.s.a.
	Plomb et ses composés inorganiques; VI.2.3.; Liste non limitative de substances, mélanges et procédés visés à l'article VI.2-1, alinéa 3

cadmium sulphate

Additional classification	Cadmium et ses composés (particules alvéolaires) (en Cd); C; La mention “C” signifie que l’agent en question relève du champ d’application de l’arrêté royal du 2 décembre 1993 concernant la protection des travailleurs contre les risques liés à l’exposition à des agents cancérigènes et mutagènes et reprotoxiques au travail.
	Cadmium et ses composés (particules inhalables) (en Cd); C; La mention “C” signifie que l’agent en question relève du champ d’application de l’arrêté royal du 2 décembre 1993 concernant la protection des travailleurs contre les risques liés à l’exposition à des agents cancérigènes et mutagènes et reprotoxiques au travail.
	Cadmium et ses composés (particules inhalables) (en Cd); C; La mention “C” signifie que l’agent en question relève du champ d’application de l’arrêté royal du 2 décembre 1993 concernant la protection des travailleurs contre les risques liés à l’exposition à des agents cancérigènes et mutagènes et reprotoxiques au travail.
Agents cancérigènes, mutagènes et reprotoxiques et aux agents possédant des propriétés perturbant le système endocrinien (Code du bien-être au travail, Livre VI, titre 2)	cancérigène catégorie 1A ou 1B selon CLP, n.s.a.
	mutagène catégorie 1A ou 1B selon CLP, n.s.a.
	reprotoxique catégorie 1A ou 1B selon CLP, n.s.a.

iron arsenate

Additional classification	Arsenic, acide arsénique et ses sels, ainsi que ses composés inorganiques (en As); C; La mention “C” signifie que l’agent en question relève du champ d’application de l’arrêté royal du 2 décembre 1993 concernant la protection des travailleurs contre les risques liés à l’exposition à des agents cancérigènes et mutagènes et reprotoxiques au travail.
Agents cancérigènes, mutagènes et reprotoxiques et aux agents possédant des propriétés perturbant le système endocrinien (Code du bien-être au travail, Livre VI, titre 2)	cancérigène catégorie 1A ou 1B selon CLP, n.s.a.

tin oxide

Résorption peau	Etain (oxyde et composés inorganiques de; sauf SnH4, en Sn); D; La mention “D” signifie que la résorption de l’agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l’exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l’agent dans l’air.

National legislation The Netherlands

NYRSTAR LEACH PRODUCT

Waterbezwaarlijkheid	Z (1); Algemene Beoordelingsmethodiek (ABM)

lead(II)sulphate

SZW - Lijst van voor de voortplanting giftige stoffen (ontwikkeling)	loodverbindingen, alle; Opgenomen in SZW-lijst van voor de voortplanting giftige stoffen (ontwikkeling); 1A
SZW - Lijst van voor de voortplanting giftige stoffen (vruchtbaarheid)	loodverbindingen, alle; Opgenomen in SZW-lijst van voor de voortplanting giftige stoffen (vruchtbaarheid); 2

cadmium sulphate

SZW - Lijst van kankerverwekkende stoffen	Cadmiumsulfaat; Opgenomen in SZW-lijst van kankerverwekkende stoffen
SZW - Lijst van mutagene stoffen	Cadmiumsulfaat; Opgenomen in SZW-lijst van mutagene stoffen
SZW - Lijst van voor de voortplanting giftige stoffen (ontwikkeling)	Cadmiumsulfaat; Opgenomen in SZW-lijst van voor de voortplanting giftige stoffen (ontwikkeling); 1B
SZW - Lijst van voor de voortplanting giftige stoffen (vruchtbaarheid)	Cadmiumsulfaat; Opgenomen in SZW-lijst van voor de voortplanting giftige stoffen (vruchtbaarheid); 1B

manganese sulphate

SZW - Lijst van voor de voortplanting giftige stoffen (ontwikkeling)	mangaan sulfaat; Opgenomen in SZW-lijst van voor de voortplanting giftige stoffen (ontwikkeling); 2
SZW - Lijst van voor de voortplanting giftige stoffen (vruchtbaarheid)	mangaan sulfaat; Opgenomen in SZW-lijst van voor de voortplanting giftige stoffen (vruchtbaarheid); 2

iron arsenate

SZW - Lijst van kankerverwekkende stoffen	anorganische arseen verbindingen; Opgenomen in SZW-lijst van kankerverwekkende stoffen
SZW - Lijst van voor de voortplanting giftige stoffen (ontwikkeling)	arseen verbindingen anorganische; Opgenomen in SZW-lijst van voor de voortplanting giftige stoffen (ontwikkeling); 1B
SZW - Lijst van voor de voortplanting giftige stoffen (vruchtbaarheid)	arseen verbindingen anorganische; Opgenomen in SZW-lijst van voor de voortplanting giftige stoffen (vruchtbaarheid); 1B
SZW - Lijst van voor de voortplanting giftige stoffen (borstvoeding)	arseen verbindingen anorganische; Opgenomen in SZW-lijst van voor de voortplanting giftige stoffen (borstvoeding)

National legislation France

NYRSTAR LEACH PRODUCT

No data available

lead(II)sulphate

Catégorie cancérogène	Plomb métallique et composés, en Pb
Catégorie toxique pour la reproduction	Plomb métallique et composés, en Pb

cadmium sulphate

Catégorie cancérogène	Cadmium et ses composés inorganiques (fraction inhalable ou alvéolaire)
	Cadmium et ses composés inorganiques (fraction inhalable ou alvéolaire)
Catégorie mutagène	Cadmium et ses composés inorganiques (fraction inhalable ou alvéolaire)
	Cadmium et ses composés inorganiques (fraction inhalable ou alvéolaire)
Catégorie toxique pour la reproduction	Cadmium et ses composés inorganiques (fraction inhalable ou alvéolaire)
	Cadmium et ses composés inorganiques (fraction inhalable ou alvéolaire)

National legislation Germany

NYRSTAR LEACH PRODUCT

WGK	3; Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) - 18. April 2017

lead(II)sulphate

TA-Luft	5.2.2/II

diiron zinc tetraoxide

TA-Luft	5.2.1

calcium sulfate

TA-Luft	5.2.1

zinc sulphate (anhydrous)

TA-Luft	5.2.1

silica, precipitated

TA-Luft	5.2.1
TRGS900 - Risiko der Fruchtschädigung	Kieselsäuren, amorphe; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden

copper sulphate

TA-Luft	5.2.2/III

cadmium sulphate

TA-Luft	5.2.7.1.1/I
TRGS905 - Krebserzeugend	Cadmium-Verbindungen (in Form atembarer Stäube/Aerosole), ausgenommen: die nachfolgend genannten sowie, die in Anhang VI Teil 3 der CLP-Verordnung namentlich aufgeführten, soweit sie "geringer eingestuft" sind; 1B
TRGS900 - Kanzerogener Stoff	Cadmium und anorganische Cadmium Verbindungen

manganese sulphate

TA-Luft	5.2.2/III
TRGS900 - Risiko der Fruchtschädigung	Mangan und seine anorganischen Verbindungen; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
	Mangan und seine anorganischen Verbindungen; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden

iron arsenate

TA-Luft	5.2.7.1.1/I

zinc sulphide

TA-Luft	5.2.1

sulfur

TA-Luft	5.2.1

magnesium sulphate

TA-Luft	5.2.1

aluminium oxide

TA-Luft	5.2.1

iron sulphide

TA-Luft	5.2.1

calcium dihydroxide

TA-Luft	5.2.1
TRGS900 - Risiko der Fruchtschädigung	Calciumdihydroxid; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden

National legislation Austria

NYRSTAR LEACH PRODUCT

No data available

cadmium sulphate

Krebserzeugend	Cadmiumsulfat; III A2
Fortpflanzungsgefährdend [fruchtschädigend (entwicklungsschädigend)]	Cadmiumsulfat; D
Fortpflanzungsgefährdend [Beeinträchtigung der Fortpflanzungsfähigkeit (Fruchtbarkeit)]	Cadmiumsulfat; F

National legislation United Kingdom

NYRSTAR LEACH PRODUCT

No data available

cadmium sulphate

Carcinogen	Cadmium compounds except cadmium oxide fume, cadmium sulphide and cadmium sulphide pigments (as Cd); Carc

iron arsenate

Carcinogen	Arsenic and compounds except arsine (as As); Carc

Other relevant data

NYRSTAR LEACH PRODUCT

No data available

lead(II)sulphate

TLV - Carcinogen	Lead and inorganic compounds, as Pb; A3

silica, precipitated

IARC - classification	3; Silica

cadmium sulphate

TLV - Carcinogen	Cadmium and compounds, as Cd; A2
	Cadmium and compounds, as Cd; A2

manganese sulphate

TLV - Carcinogen	Manganese, elemental and inorganic compounds, as Mn; A4

iron arsenate

TLV - Carcinogen	Arsenic and inorganic compounds, as As; A1

aluminium oxide

TLV - Carcinogen	Aluminium metal and insoluble compounds; A4

15.2. Chemical safety assessment

A chemical safety assessment has been performed.

SECTION 16: Other information

Full text of any H- and EUH-statements referred to under section 3:

H301 Toxic if swallowed.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H330 Fatal if inhaled.
H331 Toxic if inhaled.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H340 May cause genetic defects.
H350 May cause cancer.
H350i May cause cancer by inhalation.
H360Df May damage the unborn child. Suspected of damaging fertility.
H360FD May damage fertility. May damage the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H373 May cause damage to organs (brain) through prolonged or repeated exposure if inhaled.
H373 May cause damage to organs through prolonged or repeated exposure.
H373 May cause damage to organs (blood system, central nervous system, lungs, kidneys) 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.

(*)	INTERNAL CLASSIFICATION BY BIG
ADI	Acceptable daily intake
AOEL	Acceptable operator exposure level
ATE	Acute Toxicity Estimate
BCF	Bioconcentration Factor
BEI	Biological Exposure Indices
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EC10	Effect Concentration 10 %
EC50	Effect Concentration 50 %
ErC50	EC50 in terms of reduction of growth rate
GLP	Good Laboratory Practice
LC0	Lethal Concentration 0 %
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
LOAEC/LOAEL	Lowest Observed Adverse Effect Concentration/Lowest Observed Adverse Effect Level
NOAEC/NOAEL	No Observed Adverse Effect Concentration/No Observed Adverse Effect Level
NOEC/NOEL	No Observed Effect Concentration/No Observed Effect Level
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent, Bioaccumulative & Toxic
PNEC	Predicted No Effect Concentration
STP	Sludge Treatment Process
vPvB	very Persistent & very Bioaccumulative

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement or when this is failing the general conditions of BIG. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.