



SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
Regulation (EC) No. 1907/2006 as amended by Regulation (EU) No. 2020/878, and
Regulation (EC) No. 1272/2008

Revision date 15-Aug-2025

Revision Number 1

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

1.1. Product identifier

Product Code(s) Lithium Series UPS & Batteries
Product Name GXT5 Lithium Series UPS & Batteries
Synonyms None
Pure substance/mixture Mixture

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

Recommended use Uninterruptible Power Supply (UPS)
Uses advised against None

1.3. Details of the supplier of the safety data sheet

Importer	Manufacturer
Vertiv S.r.l. Via Leonardo da Vinci, 16-18 Piove di Sacco, Padova, 35028 Italia	Vertiv Group Corporation 505 N Cleveland Ave Westerville, OH 43082

For further information, please contact

1.4. Emergency telephone number

Emergency telephone 0800 1155 4499 / 0800 296 837

Emergency telephone - §45 - (EC)1272/2008

Europe	112
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

As supplied, this product is an article. This product contains a battery. No exposure to hazardous chemicals is expected to occur during intended product use. Misuse of the product may result in exposure to hazardous chemicals. The information below relates to the mixture of components contained within the battery.

Hazardous to the aquatic environment - acute	Category 1 - (H400)
Hazardous to the aquatic environment - chronic	Category 2 - (H411)

2.2. Label elements



Signal word
Warning

Hazard statements

H400 - Very toxic to aquatic life.

H411 - Toxic to aquatic life with long lasting effects.

Precautionary Statements - EU (§28, 1272/2008)

P273 - Avoid release to the environment.

P391 - Collect spillage.

P501 - Dispose of contents and container in accordance with local, regional, national, and international regulations as applicable.

Unknown aquatic toxicity Contains 76.7973 % of components with unknown hazards to the aquatic environment.

2.3. Other hazards

Other hazards No information available.

PBT & vPvB None known.

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Chemical name	Weight-%	REACH registration number	EC No. (Index No.)	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)	Notes
Graphite 7782-42-5	10-20	No data available	231-955-3	[C]	-	-	-	-
Copper 7440-50-8	7-13	No data available	231-159-6 (029-026-00-0)	Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	-	10	1	-
Aluminum 7429-90-5	3-7	No data available	231-072-3 (013-002-00-1)	Flam. Sol. 1 (H228) Water-react. 2 (H261)	-	-	-	T
Mercury 7439-97-6	<0.001	No data available	231-106-7 (080-001-00-0)	Acute Tox. 2 (H330) Repr. 1B (H360D) STOT RE 1 (H372) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	STOT RE 2 :: C>=0.1%	-	-	-

Lead 7439-92-1	<0.001	No data available	231-100-4 (082-014-00-7)	Repr. 1A (H360FD) Lact. (H362) Aquatic Chronic 1 (H410)	-	-	10	-
Cadmium 7440-43-9	<0.001	No data available	231-152-8 (048-002-00-0)	Acute Tox. 2 (H330) Muta. 2 (H341) Carc. 1B (H350) Repr. 2 (H361fd) STOT RE 1 (H372) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	-	-	-	-

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

[C] - Components with occupational exposure limits and/or biological occupational exposure limits requiring monitoring

Note T - This substance may be marketed in a form which does not have the physical hazards as indicated by the classification in the entry in Part 3. If the results of the relevant method or methods in accordance with Part 2 of Annex I of this Regulation show that the specific form of substance marketed does not exhibit this physical property or these physical hazards, the substance shall be classified in accordance with the result or results of this test or these tests. Relevant information, including reference to the relevant test method(s) shall be included in the safety data sheet.

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

Acute Toxicity Estimate

If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATE_{mix}) for classifying a mixture based on its components

Chemical name	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapour - mg/L	Inhalation LC50 - 4 hour - gas - ppm
Graphite 7782-42-5	No data available	No data available	2.002	No data available	No data available
Copper 7440-50-8	No data available	No data available	5.1151	No data available	No data available
Aluminum 7429-90-5	No data available	No data available	0.8889	No data available	No data available
Cadmium 7440-43-9	1140	No data available	No data available	No data available	No data available

This product does not contain candidate substances of very high concern at a concentration $\geq 0.1\%$ (Regulation (EC) No. 1907/2006 (REACH), Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	If contents are released: Remove to fresh air.
Eye contact	If contents are released: Rinse thoroughly with plenty of water, also under the eyelids.
Skin contact	If contents are released: Wash with plenty of water.
Ingestion	If contents are released: Rinse mouth. Get medical attention.

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

Symptoms None known.

Effects of Exposure None known.

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

Note to doctors Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical No information available.

Hazardous combustion products Carbon monoxide. Carbon dioxide (CO₂). Metal oxides.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Dispose of wastes in an approved waste disposal facility.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice.

General hygiene considerations Wash hands before breaks and after work. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep in a dry, cool and well-ventilated place.

Storage class (TRGS 510) LGK 11.

7.3. Specific end use(s)

Specific use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	European Union	Austria	Belgium	Bulgaria	Croatia
Graphite 7782-42-5	-	TWA-TMW: 5 mg/m ³ ; alveolar dust, respirable fraction STEL-KZGW: 10 mg/m ³ (2 X 60 min); alveolar dust with <1% Quartz, respirable fraction	TWA: 2 mg/m ³ ; alveolar fraction	TWA: 5.0 mg/m ³ ; inhalable fraction	TWA-GVI: 4 mg/m ³ ; respirable dust TWA-GVI: 10 mg/m ³ ; total dust, inhalable particles
Copper 7440-50-8	-	TWA-TMW: 1 mg/m ³ ; inhalable fraction TWA-TMW: 0.1 mg/m ³ ; respirable fraction, smoke STEL-KZGW: 4 mg/m ³ (4 X 15 min); inhalable fraction STEL-KZGW: 0.4 mg/m ³ (4 X 15 min); respirable fraction, smoke	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust and mist	TWA: 0.1 mg/m ³ ; metal vapor	TWA-GVI: 0.2 mg/m ³ ; fume TWA-GVI: 1 mg/m ³ ; dust STEL-KGVI: 2 mg/m ³ ; dust
Aluminum 7429-90-5	-	TWA-TMW: 10 mg/m ³ ; inhalable fraction STEL-KZGW: 20 mg/m ³ (2 X 60 min); inhalable fraction	TWA: 1 mg/m ³ ;	TWA: 10.0 mg/m ³ ; inhalable fraction TWA: 1.5 mg/m ³ ; respirable fraction	TWA-GVI: 10 mg/m ³ ; total dust, inhalable particles TWA-GVI: 4 mg/m ³ ; respirable dust
Mercury 7439-97-6	TWA: 0.02 mg/m ³ ;	TWA-TMW: 0.02 mg/m ³ ; as long as dust forming, inhalable fraction STEL-KZGW: 0.08 mg/m ³ (4 X 15 min); inhalable fraction, dust Sk DS	TWA: 0.02 mg/m ³ ; Sd	TWA: 0.02 mg/m ³ ;	TWA-GVI: 0.02 mg/m ³ ;

Lead 7439-92-1	TWA: 0.03 mg/m ³ ;	TWA-TMW: 0.1 mg/m ³ ; inhalable fraction STEL-KZGW: 0.4 mg/m ³ (4 X 15 min); inhalable fraction	-	TWA: 0.05 mg/m ³ ;	TWA-GVI: 0.15 mg/m ³ ;
Cadmium 7440-43-9	TWA: 0.001 mg/m ³ ; TWA: 0.004 mg/m ³ ;	-	TWA: 0.01 mg/m ³ ; alveolar particulates TWA: 0.004 mg/m ³ ; inhalable particulate	TWA: 0.004 mg/m ³ ;	TWA-GVI: 0.004 mg/m ³ ; inhalable fraction
Chemical name	Cyprus	Czech Republic	Denmark	Estonia	Finland
Graphite 7782-42-5	-	TWA: 2.0 mg/m ³ ; dust, respirable fraction	TWA: 2.5 mg/m ³ ; respirable STEL: 5 mg/m ³ ; respirable	TWA: 5 mg/m ³ ; total dust	TWA: 2 mg/m ³ ;
Copper 7440-50-8	-	TWA: 1 mg/m ³ ; dust TWA: 0.1 mg/m ³ ; fume Ceiling: 2 mg/m ³ ; dust Ceiling: 0.2 mg/m ³ ; fume	TWA: 1.0 mg/m ³ ; dust and powder TWA: 0.1 mg/m ³ ; fume STEL: 2 mg/m ³ ; dust and powder STEL: 0.2 mg/m ³ ; fume	TWA: 1 mg/m ³ ; total dust TWA: 0.2 mg/m ³ ; respirable dust	TWA: 0.02 mg/m ³ ; respirable dust
Aluminum 7429-90-5	-	TWA: 10.0 mg/m ³ ; dust	TWA: 5 mg/m ³ ; total, dust and powder TWA: 2 mg/m ³ ; respirable, dust and powder STEL: 10 mg/m ³ ; total, dust and powder STEL: 4 mg/m ³ ; respirable, dust and powder	TWA: 10 mg/m ³ ; total dust TWA: 4 mg/m ³ ; respirable dust	TWA: 1.5 mg/m ³ ;
Mercury 7439-97-6	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; Ceiling: 0.15 mg/m ³ ; pSk	TWA: 0.02 mg/m ³ ; including vapours STEL: 0.04 mg/m ³ ; including vapours pSk	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; pSk
Lead 7439-92-1	TWA: 0.15 mg/m ³ ;	TWA: 0.05 mg/m ³ ; Ceiling: 0.2 mg/m ³ ;	TWA: 0.05 mg/m ³ ; dust, fume and powder STEL: 0.1 mg/m ³ ; dust, fume and powder	TWA: 0.1 mg/m ³ ; total dust TWA: 0.05 mg/m ³ ; respirable dust	TWA: 0.1 mg/m ³ ;
Cadmium 7440-43-9	TWA: 0.001 mg/m ³ ; inhalable fraction	TWA: 0.004 mg/m ³ ; inhalable fraction of aerosol Ceiling: 0.008 mg/m ³ ; pSk	TWA: 0.001 mg/m ³ ; dust, fume and powder STEL: 0.002 mg/m ³ ; dust, fume and powder	TWA: 0.004 mg/m ³ ; inhalable fraction	TWA: 0.004 mg/m ³ ; respirable dust
Chemical name	France	Germany TRGS	Germany DFG	Greece	Hungary
Graphite 7782-42-5	TWA-VME: 2 mg/m ³ ; alveolar fraction	TWA-AGW; 1.25 mg/m ³ (exposu re factor 2); respirable fraction TWA-AGW; 10 mg/m ³ (exposure factor 2); inhalable fraction	TWA-MAK: 0.3 mg/m ³ ; II(8);respirab le fraction TWA-MAK: 4 mg/m ³ ; ;inhalable fraction Peak: 2.4 mg/m ³ ;	TWA: 10 mg/m ³ ; inhalable fraction TWA: 5 mg/m ³ ; respirable fraction	TWA-AK: 5 mg/m ³ ; inhalable concentration TWA-AK: 2 mg/m ³ ; respirable concentration

Copper 7440-50-8	TWA-VME: 0.2 mg/m ³ ; fume TWA-VME: 1 mg/m ³ ; dust STEL-VLCT: 2 mg/m ³ ; dust	-	TWA-MAK: 0.01 mg/m ³ ; II(2);respirable fraction Peak: 0.02 mg/m ³ ; respirable fraction	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust STEL: 2 mg/m ³ ; dust	TWA-AK: 0.1 mg/m ³ ; TWA-AK: 0.01 mg/m ³ ; fume; respirable fraction STEL-CK: 0.2 mg/m ³ ;
Aluminum 7429-90-5	TWA-VME: 10 mg/m ³ ; TWA-VME: 5 mg/m ³ ; dust	TWA-AGW; 1.25 mg/m ³ (exposure factor 2); respirable fraction TWA-AGW; 10 mg/m ³ (exposure factor 2); inhalable fraction	TWA-MAK: 0.5 mg/m ³ ; II(8);dust, inhalable fraction TWA-MAK: 0.05 mg/m ³ ; II(8);dust, respirable fraction Peak: 0.4 mg/m ³ ; respirable fraction Peak: 4 mg/m ³ ; inhalable fraction	TWA: 10 mg/m ³ ; inhalable fraction TWA: 5 mg/m ³ ; respirable fraction	TWA-AK: 1 mg/m ³ ; respirable fraction
Mercury 7439-97-6	TWA-VME (restrictif): 0.02 mg/m ³ ;	TWA-AGW; 0.02 mg/m ³ (exposure factor 8); Sk DS	TWA-MAK: 0.02 mg/m ³ ; II(8);inhalable fraction Peak: 0.16 mg/m ³ ; inhalable fraction Sk DS	TWA: 0.02 mg/m ³ ;	TWA-AK: 0.02 mg/m ³ ; pSk S
Lead 7439-92-1	TWA-VME (restrictif): 0.1 mg/m ³ ;	-	TWA-MAK: 0.004 mg/m ³ ; II(8);inhalable fraction Peak: 0.032 mg/m ³ ; inhalable fraction	TWA: 0.15 mg/m ³ ;	TWA-AK: 0.1 mg/m ³ ; TWA-AK: 0.05 mg/m ³ ; respirable fraction
Cadmium 7440-43-9	TWA-VME (restrictif): 0.004 mg/m ³ ; inhalable fraction	TWA-AGW; 0.002 mg/m ³ (exposure factor 8); inhalable fraction	Sk	TWA: 0.001 mg/m ³ ; inhalable fraction TWA: 0.004 mg/m ³ ; inhalable fraction	TWA-AK: 0.004 mg/m ³ ; respirable fraction
Chemical name	Ireland	Italy MDLPS	Italy AIDII	Latvia	Lithuania
Graphite 7782-42-5	TWA: 2 mg/m ³ ; all forms except fibres; respirable fraction STEL: 6 mg/m ³ (calculated); all forms except fibres; respirable fraction	-	TWA: 2 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ;	TWA-IPRD: 5 mg/m ³ ; dust
Copper 7440-50-8	TWA: 0.2 mg/m ³ ; fume TWA: 1 mg/m ³ ; dusts and mists STEL: 2 mg/m ³ ; dusts and mists STEL: 0.6 mg/m ³ (calculated); fume	-	TWA: 0.2 mg/m ³ ; fume	TWA: 0.5 mg/m ³ ; STEL: 1 mg/m ³ ;	TWA-IPRD: 1 mg/m ³ ; inhalable fraction TWA-IPRD: 0.2 mg/m ³ ; respirable fraction
Aluminum 7429-90-5	TWA: 1 mg/m ³ ; respirable fraction STEL: 3 mg/m ³ (calculated); respirable dust	-	TWA: 1 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ;	TWA-IPRD: 5 mg/m ³ ; inhalable fraction TWA-IPRD: 2 mg/m ³ ; respirable fraction TWA-IPRD: 1 mg/m ³ ;
Mercury 7439-97-6	TWA: 0.02 mg/m ³ ; STEL: 0.06	TWA: 0.02 mg/m ³ ; pSk	TWA: 0.025 mg/m ³ ; pSk	-	TWA-IPRD: 0.02 mg/m ³ ;

	mg/m ³ (calculated);				
Lead 7439-92-1	TWA: 0.15 mg/m ³ ; STEL: 0.45 mg/m ³ (calculated);	TWA: 0.15 mg/m ³ ;	TWA: 0.05 mg/m ³ ;	-	TWA-IPRD: 0.15 mg/m ³ ; inhalable fraction TWA-IPRD: 0.07 mg/m ³ ; respirable fraction
Cadmium 7440-43-9	TWA: 0.001 mg/m ³ ; inhalable fraction TWA: 0.004 mg/m ³ ; inhalable fraction STEL: 0.003 mg/m ³ (calculated); i nhalable fraction STEL: 0.012 mg/m ³ (calculated;a pplies until 11 July 2027); inhalable fraction	TWA: 0.001 mg/m ³ ; inhalable fraction TWA: 0.004 mg/m ³ ; inhalable fraction	TWA: 0.01 mg/m ³ ;	-	TWA-IPRD: 0.004 mg/m ³ ; inhalable fraction
Chemical name	Luxembourg	Malta	Netherlands	Norway	Poland
Graphite 7782-42-5	-	-	-	TWA: 5 mg/m ³ ; total dust TWA: 2 mg/m ³ ; respirable dust TWA: 10 mg/m ³ ; total dust TWA: 4 mg/m ³ ; respirable dust STEL: 10 mg/m ³ (natural;value calculated); total dust STEL: 4 mg/m ³ (natural;value calculated); respirable dust STEL: 20 mg/m ³ (synthetic;val ue calculated); total dust STEL: 8 mg/m ³ (synthetic;val ue calculated); respirable dust	TWA-NDS: 4.0 mg/m ³ ; inhalable fraction TWA-NDS: 1.0 mg/m ³ ; respirable fraction TWA-NDS: 6 mg/m ³ ; inhalable fraction
Copper 7440-50-8	-	-	TWA: 0.1 mg/m ³ ; inhalable	TWA: 0.1 mg/m ³ ; fume TWA: 1 mg/m ³ ; dust STEL: 3 mg/m ³ (value calculated); dust STEL: 0.3 mg/m ³ (value calculated); fume	TWA-NDS: 0.2 mg/m ³ ;
Aluminum 7429-90-5	-	-	-	TWA: 5 mg/m ³ ; powder STEL: 10 mg/m ³ (pyrotechnic al;value calculated); powder	TWA-NDS: 2.5 mg/m ³ ; inhalable fraction TWA-NDS: 1.2 mg/m ³ ; respirable fraction
Mercury	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ;	TWA-NDS: 0.02

7439-97-6				STEL: 0.06 mg/m ³ (value calculated); As	mg/m ³ ; vapor Sk
Lead 7439-92-1	TWA: 0.15 mg/m ³ ;	-	TWA: 0.15 mg/m ³ ;	TWA: 0.05 mg/m ³ ; dust and fume STEL: 0.15 mg/m ³ (value calculated); dust and fume	TWA-NDS: 0.05 mg/m ³ ; inhalable fraction
Cadmium 7440-43-9	-	-	TWA: 0.004 mg/m ³ ;	TWA: 0.001 mg/m ³ ; inhalable fraction STEL: 0.003 mg/m ³ (value calculated); inhalable fraction	TWA-NDS: 0.004 mg/m ³ ; inhalable fraction
Chemical name	Portugal	Romania	Slovakia	Slovenia	Spain
Graphite 7782-42-5	TWA (VLE-MP): 2 mg/m ³ ; respirable fraction	TWA: 2 mg/m ³ ; dust; respirable fraction	TWA: 10 mg/m ³ ; total aerosol TWA: 2 mg/m ³ ; respirable fraction Ceiling: 10 mg/m ³ ; solid aerosol	-	TWA-(VLA-ED): 2 mg/m ³ ; dust; respirable fraction
Copper 7440-50-8	TWA (VLE-MP): 0.2 mg/m ³ ; fume TWA (VLE-MP): 1 mg/m ³ ; dust; mist	TWA: 0.5 mg/m ³ ; dust STEL: 0.2 mg/m ³ ; fume STEL: 1.5 mg/m ³ ; dust	TWA: 1 mg/m ³ ; inhalable fraction TWA: 0.2 mg/m ³ ; respirable fraction	-	TWA-(VLA-ED): 0.01 mg/m ³ ; respirable fraction
Aluminum 7429-90-5	TWA (VLE-MP): 1 mg/m ³ ; respirable fraction	TWA: 3 mg/m ³ ; dust TWA: 1 mg/m ³ ; fume STEL: 10 mg/m ³ ; dust STEL: 3 mg/m ³ ; fume	TWA: 4 mg/m ³ ; inhalable dust TWA: 1.5 mg/m ³ ; respirable dust	-	TWA-(VLA-ED): 1 mg/m ³ ; respirable fraction
Mercury 7439-97-6	TWA (VLE-MP): 0.02 mg/m ³ ; pSk	TWA: 0.02 mg/m ³ ;	TWA: 0.01 mg/m ³ ; TWA: 0.02 mg/m ³ ; pSk S	TWA: 0.02 mg/m ³ ; inhalable fraction STEL: 0.16 mg/m ³ ; inhalable fraction pSk	TWA-(VLA-ED): 0.02 mg/m ³ ;
Lead 7439-92-1	TWA (VLE-MP): 0.15 mg/m ³ ;	TWA: 0.15 mg/m ³ ;	TWA: 0.05 mg/m ³ ; TWA: 0.15 mg/m ³ ;	TWA: 0.1 mg/m ³ ; inhalable fraction STEL: 0.4 mg/m ³ ; inhalable fraction	TWA-(VLA-ED): 0.15 mg/m ³ ;
Cadmium 7440-43-9	TWA (VLE-MP): 0.001 mg/m ³ ; inhalable fraction TWA (VLE-MP): 0.004 mg/m ³ ; inhalable fraction	TWA: 0.001 mg/m ³ ; inhalable fraction TWA: 0.004 mg/m ³ ;	TWA: 0.001 mg/m ³ ; inhalable fraction TWA: 0.004 mg/m ³ ; inhalable fraction STEL: 0.15 mg/m ³ ; aerosol and dust STEL: 0.75 mg/m ³ ;	TWA: 0.004 mg/m ³ ; inhalable fraction	TWA-(VLA-ED): 0.01 mg/m ³ ; inhalable fraction; non-pyrophoric TWA-(VLA-ED): 0.002 mg/m ³ ; respirable fraction; non-pyrophoric TWA-(VLA-ED): 0.01 mg/m ³ ; pyrophoric TWA-(VLA-ED): 0.002 mg/m ³ ; pyrophoric
Chemical name	Sweden		Switzerland		United Kingdom
Graphite	-		TWA-MAK: 3 mg/m ³ ; respirable		TWA: 10 mg/m ³ ; inhalable dust

7782-42-5		dust TWA-MAK: 10 mg/m ³ ; inhalable dust	TWA: 4 mg/m ³ ; respirable dust STEL: 30 mg/m ³ ; inhalable dust STEL: 12 mg/m ³ ; respirable dust
Copper 7440-50-8	TLV-NGV: 0.01 mg/m ³ ; respirable fraction	TWA-MAK: 0.1 mg/m ³ ; inhalable dust STEL-KZGW: 0.2 mg/m ³ ; inhalable dust	TWA: 1 mg/m ³ ; dust and mist TWA: 0.2 mg/m ³ ; fume STEL: 0.6 mg/m ³ ; fume STEL: 2 mg/m ³ ; dust and mist
Aluminum 7429-90-5	TLV-NGV: 5 mg/m ³ ; total dust TLV-NGV: 2 mg/m ³ ; respirable fraction	TWA-MAK: 3 mg/m ³ ; respirable dust TWA-MAK: 10 mg/m ³ ; inhalable dust	TWA: 10 mg/m ³ ; inhalable dust TWA: 4 mg/m ³ ; respirable dust STEL: 30 mg/m ³ ; inhalable dust STEL: 12 mg/m ³ ; respirable dust
Mercury 7439-97-6	TLV-NGV: 0.02 mg/m ³ ;	TWA-MAK: 0.01 mg/m ³ ; inhalable dust TWA-MAK: 0.02 mg/m ³ ; aerosol, vapour STEL-KZGW: 0.16 mg/m ³ ; aerosol, vapour Sk S	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ ;
Lead 7439-92-1	TLV-NGV: 0.1 mg/m ³ ; inhalable fraction TLV-NGV: 0.05 mg/m ³ ; respirable fraction	TWA-MAK: 0.1 mg/m ³ ; inhalable dust STEL-KZGW: 0.8 mg/m ³ ; inhalable dust	TWA: 0.15 mg/m ³ ; STEL: 0.45 mg/m ³ ;
Cadmium 7440-43-9	TLV-NGV: 0.001 mg/m ³ ; inhalable fraction TLV-NGV: 0.004 mg/m ³ ; inhalable fraction	TWA-MAK: 0.001 mg/m ³ ; inhalable dust Sk	TWA: 0.025 mg/m ³ ; STEL: 0.075 mg/m ³ ;

Note

See section 16 for terms and abbreviations

Biological occupational exposure limits

Chemical name	European Union	Austria	Bulgaria	Croatia	Czech Republic
Aluminum 7429-90-5	-	60 µg/g Creatinine (urine - Aluminum after end of work day, at the end of a work week/end of the shift)	-	200 µg/L - urine (Aluminum) - at the end of the work shift	-
Mercury 7439-97-6	-	25 µg/g Creatinine - urine - after end of work day, at the end of a work week/end of the shift	100 µg/L - urine (Mercury) - not fixed	10 µg/L - blood (Mercury) - not critical 30 µg/g Creatinine - urine (Mercury) - single sample or urine collected over 24 hours	0.056 µmol/mmol Creatinine (urine - Mercury discretionary) 0.1 mg/g Creatinine (urine - Mercury discretionary)
Lead 7439-92-1	30 µg/100 mL - blood (Lead) - no restriction 0.015 mg/m ³ - air (Lead) - 40 hours per week 15 µg/100 mL - blood (Lead) - no restriction	120 µg/100 mL RBC Erythrocyte protoporphyrin - blood (Ethylenediaminetetraacetic acid) - not provided 30 µg/100 mL blood Lead - blood (Ethylenediaminetetraacetic acid) - not provided	300 µg/L - blood (Lead) - not fixed 400 µg/L - blood (Lead) - not fixed	400 µg Pb/L - blood (Lead) - not critical 300 µg Pb/L - blood (Lead) - not critical 15 U/LE - blood (delta-Aminolevulinic acid dehydratase) - not critical 1.50 mg/LE - blood (Protoporphyrin in erythrocytes) - after exposure during 2-3	13 µmol/mmol Creatinine (urine - 5-Aminolevulinic acid discretionary) 0.035 µmol/mmol Creatinine (urine - Coproporphyrin discretionary) 15 mg/g Creatinine (urine - 5-Aminolevulinic acid discretionary)

		3.8 million/ μ L Erythrocytes - blood (Ethylenediaminetetraacetic acid) - not provided 12 g/dL Hemoglobin - blood (Ethylenediaminetetraacetic acid) - not provided 35 % Hematocrit - blood (Ethylenediaminetetraacetic acid) - not provided 10 mg/L - urine (.delta.-Aminolevulinic acid) - not provided 3.2 million/ μ L Erythrocytes - blood (Ethylenediaminetetraacetic acid) - not provided 10 g/dL Hemoglobin - blood (Ethylenediaminetetraacetic acid) - not provided 30 % Hematocrit - blood (Ethylenediaminetetraacetic acid) - not provided 6 mg/L - urine (.delta.-Aminolevulinic acid) - not provided		months (sample protected from light) 70 μ g Pb/100 mL - blood (Lead) - if the exposure to the concentration of Lead in the air is greater than 0.075 mg/m ³ , calculated as a time-weighted average during 40 hours per week, or if the level of Lead in the blood of individual workers is greater than 40 μ g Pb/100 mL of blood	0.2 mg/g Creatinine (urine - Coproporphyrin discretionary) 0.4 mg/L (blood - Lead discretionary)
Cadmium 7440-43-9	-	2.5 μ g/g Creatinine - urine (N-Acetylglucosaminidase) - not provided	-	5 μ g/L - blood (Cadmium) - not critical 5 μ g/g Creatinine - urine (Cadmium) - single sample or urine collected over 24 hours	0.005 μ mol/mmol Creatinine (urine - Cadmium discretionary) 0.005 mg/g Creatinine (urine - Cadmium discretionary) 0.045 μ mol/L (blood - Cadmium discretionary) 0.005 mg/L (blood - Cadmium discretionary)
Chemical name	Denmark	Finland	France	Germany DFG	Germany TRGS
Aluminum 7429-90-5	-	-	-	50 μ g/g Creatinine (urine - Aluminum at the end of the shift, in case of long-term exposure after several previous	50 μ g/g Creatinine (urine - Aluminum at the end of the shift, in case of long-term exposure after several previous

				shifts) 50 µg/g Creatinine - BAT (for long-term exposures: at the end of the shift after several shifts) urine 15 µg/g Creatinine - BAR (for long-term exposures: at the end of the shift after several shifts) urine	shifts)
Mercury 7439-97-6	-	140 nmol/L (urine - Mercury in the morning after a working day at the end of a working week or exposure period) 50 nmol/L (blood - Mercury, inorganic at the end of a working week; time of day does not matter)	- blood (total Inorganic mercury) - end of shift at end of workweek - urine (total Inorganic mercury) - prior to shift	25 µg/g Creatinine (urine - Mercury no restriction in steady state) 25 µg/g Creatinine - BAT (no restriction in steady state) urine	25 µg/g Creatinine (urine - Mercury no restriction in steady state)
Lead 7439-92-1	20 µg/100 mL (blood - Lead)	1.4 µmol/L (blood - Lead time of day does not matter) 50 µg/dL (blood - Lead) 40 µg/dL (blood - Lead)	400 µg/L - blood (Lead) - 180 µg/L - blood (Lead) - indifferent sampling time 300 µg/L - blood (Lead) - 200 µg/L - blood (Lead) - 100 µg/L - blood (Lead) -	150 µg/L (whole blood - Lead no restriction in steady state) 150 µg/L - BAT (no restriction in steady state) blood 30 µg/L - BAR (no restriction in steady state) blood 40 µg/L - BAR (no restriction in steady state) blood	150 µg/L (whole blood - Lead no restriction in steady state)
Cadmium 7440-43-9	-	20 nmol/L (urine - Cadmium at the end of a working week; time of day does not matter)	0.005 mg/g creatinine - urine (Cadmium) - not critical 0.004 mg/L - blood (Cadmium) - not critical	1 µg/L - BAR (no restriction in steady state) blood 0.8 µg/L - BAR (no restriction in steady state) urine 2 µg/g Creatinine - BLW (no restriction in steady state) urine	-
Chemical name	Hungary	Ireland	Italy MDLPS	Italy AIDII	
Mercury 7439-97-6	0.030 mg/g Creatinine (urine - Mercury not critical) 0.017 µmol/mmol Creatinine (urine - Mercury not critical)	10 µg/L (blood - Mercury) 30 µg/g Creatinine (urine - Mercury)	-	20 µg/g Creatinine - urine (Total inorganic mercury) - prior to shift	
Lead 7439-92-1	-	70 µg/100 mL (blood - Lead not critical) >40 µg/100 mL (blood - Lead not critical) 30 µg/100 mL (blood - Lead not critical)	60 Pb µg/100 mL (blood - end of workweek)	30 µg/100 mL - blood (Lead) - not critical	
Cadmium 7440-43-9	0.02 mg/g Creatinine (urine - Cadmium not	2 µg/g Creatinine (urine - not critical)	-	5 µg/g Creatinine - urine (Cadmium) - not critical	

	critical) 0.02 µmol/mmol Creatinine (urine - Cadmium not critical)			5 µg/L - blood (Cadmium) - not critical
Chemical name	Latvia	Luxembourg	Romania	Slovakia
Aluminum 7429-90-5	50 µg/g Creatinine - urine (Aluminum) - end of shift	-	200 µg/L - urine (Aluminum) - end of shift	60 µg/g creatinine (urine - Aluminum not critical)
Mercury 7439-97-6	-	-	10 µg/L - blood (Mercury) - end of shift 30 µg/g Creatinine - urine (Mercury) - beginning of next shift	37.5 µg/L (urine - Mercury not critical) 15 mg/L (blood - Mercury after all work shifts)
Lead 7439-92-1	-	70 µg/100 mL - blood (Lead) - 0.075 mg/m ³ - air (Lead) - 40 µg/100 mL - blood (Lead) -	150 µg/L - urine (Lead) - end of shift 70 µg/100 mL - blood (Lead) - end of shift 3 mg/cm - hair (Lead) - end of shift 10 mg/L - urine (.delta.-Aminolevulinic acid) - end of shift 300 µg/L - urine (Coproporphyrin) - end of shift 100 µg/100 mL Erythrocyte - blood (free Erythrocytes protoporphyrin) - end of shift	400 µg/L (blood - Lead not critical) 100 µg/L (blood - Lead not critical) 15 mg/L (urine - .delta.-Aminolevulinic acid not critical) 6 mg/L (urine - .delta.-Aminolevulinic acid not critical) 0.30 mg/L (urine - Coproporphyrins not critical)
Cadmium 7440-43-9	-	-	2 µg/g Creatinine - urine (Cadmium) - end of shift 5 µg/L - blood (Cadmium) - end of shift 2 mg/L - urine (Protein) - end of shift	3.1 µg/L (urine - Cadmium not critical)
Chemical name	Slovenia	Spain	Switzerland	United Kingdom
Aluminum 7429-90-5	50 µg/L - urine (Aluminum) - for long-term exposure: at the end of the work shift after several consecutive workdays	-	50 µg/g creatinine (urine - Aluminum after several shifts (for long-term exposures)) 0.21 µmol/mmol creatinine (urine - Aluminum after several shifts (for long-term exposures))	-
Mercury 7439-97-6	0.25 µg/g Creatinine - urine (Mercury) - not relevant 30 µg/L urine - urine (Mercury) - not relevant	30 µg/g Creatinine (urine - total Inorganic mercury pre-shift) 10 µg/L (blood - total Inorganic mercury end of workweek)	25 µg/g creatinine (urine - Mercury inorganic no restrictions) 14.3 nmol/mmol creatinine (urine - Mercury inorganic no restrictions)	20 µmol/mol creatinine - urine (Mercury) - random
Lead 7439-92-1	400 µg/L - blood (Lead) - not relevant 300 µg/L - blood (Lead) - not relevant	70 µg/dL (blood - Lead not critical)	400 µg/L (whole blood - Lead no restrictions) 1.93 µmol/L (whole blood - Lead no restrictions) 100 µg/L (whole blood - Lead no restrictions) 0.48 µmol/L (whole blood - Lead no restrictions)	-
Cadmium	-	2 µg/g Creatinine (urine -	2 µg/g creatinine (urine -	-

7440-43-9		Cadmium not critical) 5 µg/L (blood - Cadmium not critical)	Cadmium no restrictions) 2.01 nmol/mmol creatinine (urine - Cadmium no restrictions)	
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Note 1: Details about BEL values can be found in Annex 2 of the Austrian Ordinance on Health Monitoring in the Workplace.

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
Graphite 7782-42-5	-	-	0.14 mg/m ³ [5] [6] 0.26 mg/m ³ [5] [7]
Copper 7440-50-8	-	137 mg/kg bw/day [4] [6] 273 mg/kg bw/day [4] [7]	-
Mercury 7439-97-6	-	-	0.02 mg/m ³ [4] [6]
Cadmium 7440-43-9	-	-	4 µg/m ³ [5] [6]

Notes

[4]	Systemic health effects.
[5]	Local health effects.
[6]	Long term.
[7]	Short term.

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
Graphite 7782-42-5	-	-	0.025 mg/m ³ [5] [6] 0.13 mg/m ³ [5] [7]
Copper 7440-50-8	-	273 mg/kg bw/day [4] [6] 273 mg/kg bw/day [4] [7]	-
Mercury 7439-97-6	7.39 µg/kg bw/day [4] [6]	-	0.004 mg/m ³ [4] [6]
Cadmium 7440-43-9	1 µg/kg bw/day [4] [6]	-	-

Notes

[4]	Systemic health effects.
[5]	Local health effects.
[6]	Long term.
[7]	Short term.

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
Graphite 7782-42-5	0.78 mg/L	1.9 mg/L	0.078 mg/L	1.9 mg/L	-
Copper 7440-50-8	6.3 µg/L	-	5.2 µg/L	-	-
Aluminum 7429-90-5	74.9 µg/L	-	-	-	-
Mercury 7439-97-6	0.0574 µg/L	-	0.0672 µg/L	-	-
Lead 7439-92-1	10.9 mg/kg food 2.4 µg/L	-	10.9 mg/kg food 3.3 µg/L	-	-

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
Cadmium 7440-43-9	0.16 mg/kg food 0.19 µg/L	-	0.16 mg/kg food 1.14 µg/L	-	-

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
Graphite 7782-42-5	-	-	50 mg/L	-	-
Copper 7440-50-8	87 mg/kg sediment dw	676 mg/kg sediment dw	230 µg/L	65 mg/kg soil dw	-
Aluminum 7429-90-5	-	-	20 mg/L	-	-
Mercury 7439-97-6	9.3 mg/kg sediment dw	9.3 mg/kg sediment dw	2.25 µg/L	22 µg/kg soil dw	-
Lead 7439-92-1	186 mg/kg sediment dw	168 mg/kg sediment dw	100 µg/L	212 mg/kg soil dw	-
Cadmium 7440-43-9	1.8 mg/kg sediment dw	0.64 mg/kg sediment dw	20 µg/L	0.9 mg/kg soil dw	-

8.2. Exposure controls

Engineering controls

Showers
Eyewash stations
Ventilation systems.

Personal protective equipment

Eye/face protection

No special protective equipment required.

Hand protection

No special protective equipment required.

Skin and body protection

No special protective equipment required.

Respiratory protection

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Environmental exposure controls

No information available.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Solid containing liquid
Physical state	Solid
Colour	Varies
Odour	No information available
Odour threshold	No information available

Property

Values

Remarks • Method

Melting point / freezing point
Boiling point or initial boiling point
and boiling range
Flammability
Lower and upper explosion

No data available
No data available
No data available

limit/flammability limit	
Lower explosion limit	No data available
Upper explosion limit	No data available
Flash point	No data available
Autoignition temperature	No data available
Decomposition temperature	No data available
SADT (°C)	No data available
pH	No data available
pH (as aqueous solution)	No data available
Kinematic viscosity	No data available
Dynamic viscosity	No data available
Water solubility	No data available
Solubility	No data available
Partition coefficient n-octanol/water (log value)	No data available
Vapour pressure	No data available
Density and/or relative density	No data available
Bulk density	No data available
Liquid Density	No data available
Relative vapour density	No data available
Particle characteristics	
Particle Size	No data available
Particle Size Distribution	No data available

9.2. Other information

Molecular weight	No information available
VOC content	0.0%
Softening point	No information available

9.2.1. Information with regards to physical hazard classes**Explosives**

Explosive properties	No information available
Oxidising properties	No information available

9.2.2. Other safety characteristics

No information available

SECTION 10: Stability and reactivity**10.1. Reactivity**

Reactivity	None under normal use conditions.
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10.2. Chemical stability

Stability	Stable under normal conditions.
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Explosion data

Sensitivity to mechanical impact	None.
Sensitivity to static discharge	None.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	None under normal processing.
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10.4. Conditions to avoid

Conditions to avoid	None known based on information supplied.
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10.5. Incompatible materials

Incompatible materials None known based on information supplied.

10.6. Hazardous decomposition products

Hazardous decomposition products None known based on information supplied.

SECTION 11: Toxicological information

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

Information on likely routes of exposure

Product Information

Inhalation Specific test data for the substance or mixture is not available.

Eye contact Specific test data for the substance or mixture is not available.

Skin contact Specific test data for the substance or mixture is not available.

Ingestion Specific test data for the substance or mixture is not available.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms None known.

Acute toxicity Based on available data, the classification criteria are not met.

Numerical measures of toxicity

The following ATE values have been calculated for the mixture:

ATE_{mix} (dermal) 3,960.00 mg/kg

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Graphite	-	-	> 2000 mg/m ³ (Rat) 4 h
Copper	-	-	> 5.11 mg/L (Rat) 4 h
Aluminum	-	-	> 0.888 mg/L (Rat) 4 h
Mercury	-	-	< 27 mg/m ³ (Rat) 2 h
Cadmium	= 1140 mg/kg (Rat)	-	= 25 mg/m ³ (Rat) 30 min

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Germ cell mutagenicity

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as mutagenic.

Chemical name	European Union
Cadmium	Muta. 2

Carcinogenicity Based on available data, the classification criteria are not met.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	European Union
Cadmium	Carc. 1B

Reproductive toxicity

Based on available data, the classification criteria are not met.

Reproductive toxicity

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as reproductive toxins.

Chemical name	European Union
Mercury	Repr. 1B
Lead	Repr. 1A Lact.
Cadmium	Repr. 2

STOT - single exposure

Based on available data, the classification criteria are not met.

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on other hazards**11.2.1. Endocrine disrupting properties****Endocrine disrupting properties**

Based on available data, the classification criteria are not met.

11.2.2. Other information**Other adverse effects**

No information available.

SECTION 12: Ecological information**12.1. Toxicity****Ecotoxicity**

Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Unknown aquatic toxicity

Contains 76.7973 % of components with unknown hazards to the aquatic environment.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Graphite 7782-42-5	-	LC50: >100mg/L (96h, Danio rerio)	-	-
Copper 7440-50-8	EC50: 0.0426 - 0.0535mg/L (72h, Pseudokirchneriella subcapitata) EC50: 0.031 - 0.054mg/L (96h, Pseudokirchneriella subcapitata)	LC50: 0.0068 - 0.0156mg/L (96h, Pimephales promelas) LC50: <0.3mg/L (96h, Pimephales promelas) LC50: =0.2mg/L (96h, Pimephales promelas) LC50: =0.052mg/L (96h, Oncorhynchus mykiss) LC50: =1.25mg/L (96h, Lepomis macrochirus) LC50: =0.3mg/L (96h, Cyprinus carpio) LC50: =0.8mg/L (96h,	-	EC50: =0.03mg/L (48h, Daphnia magna)

		Cyprinus carpio) LC50: =0.112mg/L (96h, Poecilia reticulata)		
Mercury 7439-97-6	-	LC50: =0.5mg/L (96h, Cyprinus carpio) LC50: =0.16mg/L (96h, Cyprinus carpio) LC50: =0.18mg/L (96h, Cyprinus carpio) LC50: =0.9mg/L (96h, Oryzias latipes)	-	-
Lead 7439-92-1	-	LC50: =0.44mg/L (96h, Cyprinus carpio) LC50: =1.17mg/L (96h, Oncorhynchus mykiss) LC50: =1.32mg/L (96h, Oncorhynchus mykiss)	-	EC50: =600µg/L (48h, water flea)
Cadmium 7440-43-9	-	LC50: =0.003mg/L (96h, Oncorhynchus mykiss) LC50: =0.006mg/L (96h, Oncorhynchus mykiss) LC50: =0.002mg/L (96h, Cyprinus carpio) LC50: =4.26mg/L (96h, Cyprinus carpio) LC50: =0.24mg/L (96h, Cyprinus carpio) LC50: =21.1mg/L (96h, Lepomis macrochirus) LC50: =0.016mg/L (96h, Oryzias latipes) LC50: 0.0004 - 0.003mg/L (96h, Pimephales promelas)	-	EC50: =0.0244mg/L (48h, Daphnia magna)

12.2. Persistence and degradability

Persistence and degradability No information available.

12.3. Bioaccumulative potential

Bioaccumulation No information available.

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment Based on available data, the classification criteria are not met.

Chemical name	PBT and vPvB assessment
Graphite 7782-42-5	Not PBT/vPvB
Copper 7440-50-8	Not PBT/vPvB

Aluminum 7429-90-5	Not PBT/vPvB
Lead 7439-92-1	PBT assessment does not apply
Cadmium 7440-43-9	PBT assessment does not apply

12.6. Endocrine disrupting properties

Endocrine disrupting properties Based on available data, the classification criteria are not met.

12.7. Other adverse effects

Other adverse effects No information available.

PMT or vPvM properties Based on available data, the classification criteria are not met.

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

Waste codes / waste designations according to EWC / AVV According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport information**IATA****Notes**

Forbidden for transport by Passenger Air.

Forbidden for transport by Passenger Air.

14.1 UN number or ID number

UN3480

14.2 UN proper shipping name

Lithium ion batteries

14.3 Transport hazard class(es)

9

14.4 Packing group

Not regulated

14.5 Environmental hazards

Yes

14.6 Special precautions for user

Special Provisions

A88, A99, A154, A183, A201, A213, A331, A334, A802

ERG Code

12FZ

Description

UN3480, Lithium ion batteries, 9

IMDG

14.1 UN number or ID number

UN3480

14.2 UN proper shipping name

Lithium ion batteries

14.3 Transport hazard class(es)

9

14.4 Packing group

Not regulated

14.5 Environmental hazards

Yes

Marine pollutant indicator

P

14.6 Special precautions for user

Special Provisions

188, 230, 310, 348, 376, 377, 384, 387 F-A S-I

Description

UN3480, Lithium ion batteries, 9, Marine pollutant

14.7 Maritime transport in bulk according to IMO instruments

No information available

RID

14.1 UN number or ID number	UN3480
14.2 UN proper shipping name	Lithium ion batteries
14.3 Transport hazard class(es)	9
14.4 Packing group	Not applicable
Description	UN3480, Lithium ion batteries, 9, Environmentally Hazardous
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	188, 230, 310, 348, 376, 377, 387, 636, 677
Classification code	M4

ADR

14.1 UN number or ID number	UN3480
14.2 UN proper shipping name	Lithium ion batteries
14.3 Transport hazard class(es)	9
14.4 Packing group	Not regulated
Description	UN3480, Lithium ion batteries, 9, (E), Environmentally Hazardous
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	188, 230, 310, 348, 376, 377, 387, 636, 677
Classification code	M4
Tunnel restriction code	(E)

ADN

14.1 UN number or ID number	UN3480
14.2 UN proper shipping name	Lithium ion batteries
14.3 Transport hazard class(es)	9
14.4 Packing group	Not applicable
Description	UN3480, Lithium ion batteries, 9, Environmentally Hazardous
14.5 Environmental hazard	Yes
14.6 Special precautions for user	
Special Provisions	188, 230, 310, 348, 376, 377, 387, 636, 677
Classification code	M4
Equipment Requirements	PP

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations****France****Occupational Illnesses (R-463-3, France)**

Chemical name	French RG number
Graphite - 7782-42-5	RG 16 RG 25
Aluminum - 7429-90-5	RG 32 RG 16, RG 16bis
Mercury - 7439-97-6	RG 2
Lead - 7439-92-1	RG 1
Cadmium - 7440-43-9	RG 61, RG 61bis

Germany

Water hazard class (WGK) obviously hazardous to water (WGK 2).

Chemical Prohibition Ordinance (ChemVerbotsV)

This product is subject to requirements and restrictions regarding handling and delivery.

Chemical name	ANNEX I
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Chemical name	ANNEX I
Lead 7439-92-1	1.2
Cadmium 7440-43-9	1.2

TA Luft (German Air Pollution Control Regulation)

Chemical name	Number	Class
Copper	5.2.2	Class III
Mercury	5.2.2	Class I
Lead	5.2.2	Class II
Cadmium	5.2.7.1.1	Class I

TRGS 905

Not applicable.

Netherlands**Carcinogenic, mutagenic and reproductive toxic effects**

Chemical name	Netherlands - List of Carcinogens	Netherlands - List of Mutagens	Netherlands - List of Reproductive Toxins
Mercury - 7439-97-6	-	-	Development Category 1B
Lead - 7439-92-1	-	-	Development Category 1A; powder, particle diameter <1 mm Fertility Category 1A; powder, particle diameter <1 mm Can be harmful via breastfeeding powder, particle diameter <1 mm Development Category 1A; solid, particle diameter ≥1 mm Fertility Category 1A; solid, particle diameter ≥1 mm Can be harmful via breastfeeding solid, particle diameter ≥1 mm
Cadmium - 7440-43-9	Present	-	Fertility Category 1B Development Category 1B Can be harmful via breastfeeding

Switzerland

Ordinance on the Incentive Tax on Volatile Organic Compounds (OVOC) SR 814.018 Not applicable.
Storage of Hazardous Material SC 11/13.
WPO (GSchV) SR 814.201; WPA (GSchG) SR 814.20 Not applicable.
Major Accidents Ordinance SR 814.012 Not applicable.

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents

at work.

Authorisations and/or restrictions on use:

This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorisation per REACH Annex XIV
Copper - 7440-50-8	75	-
Aluminum - 7429-90-5	75	-
Mercury - 7439-97-6	18[a] 30 75	-
Lead - 7439-92-1	72 30 63 75	-
Cadmium - 7440-43-9	72 23 28 75	-

Persistent Organic Pollutants

Not applicable.

Export Notification requirements

This product contains substances which are regulated pursuant to Regulation (EC) No. 649/2012 of the European parliament and of the council concerning the export and import of dangerous chemicals.

Chemical name	European Export/Import Restrictions per (EC) 649/2012 - Annex Number
Mercury - 7439-97-6	I.1 I.2 I.3 V
Lead - 7439-92-1	I.1
Cadmium - 7440-43-9	I.1 I.2

Dangerous substance category per Seveso Directive (2012/18/EU)

E1 - Hazardous to the Aquatic Environment in Category Acute 1 or Chronic 1. E2 - Hazardous to the Aquatic Environment in Category Chronic 2.

Ozone-depleting substances (ODS) regulation (EC) 2024/590

Not applicable.

Biocidal Products Regulation (EU) No 528/2012 (BPR)

Chemical name	Biocidal Products Regulation (EU) No 528/2012 (BPR)
Copper - 7440-50-8	Product-type 8: Wood preservatives Product-type 21: Antifouling products

EU - Water Framework Directive (2000/60/EC)

Chemical name	EU - Water Framework Directive (2000/60/EC)
Mercury - 7439-97-6	Priority hazardous substance
Lead - 7439-92-1	Priority substance
Cadmium - 7440-43-9	Priority hazardous substance

EU - Environmental Quality Standards (2008/105/EC)

Chemical name	EU - Environmental Quality Standards (2008/105/EC)
Mercury - 7439-97-6	Priority hazardous substance

Lead - 7439-92-1	Priority substance
Cadmium - 7440-43-9	Priority hazardous substance

Explosives Precursors Marketing and Use (2019/1148)

This product is regulated by Regulation (EU) 2019/1148: all suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point. Please see https://home-affairs.ec.europa.eu/policies/internal-security/counter-terrorism-and-radicalisation/protection/legislation-chemicals-use-d-home-made-explosives_en.

Chemical name	Limit value	Upper limit value for the purpose of licensing under article 5(3)	Reportable explosives precursors
Aluminum 7429-90-5	-	-	Present

International Inventories

Contact supplier for inventory compliance status

15.2. Chemical safety assessment

Chemical Safety Report No information available.

SECTION 16: Other information**Key or legend to abbreviations and acronyms used in the safety data sheet****Full text of any hazard and/or precautionary statements referred to under Sections 2-15**

H228 - Flammable solid
H261 - In contact with water releases flammable gases
H330 - Fatal if inhaled
H341 - Suspected of causing genetic defects
H350 - May cause cancer
H360D - May damage the unborn child
H360FD - May damage fertility. May damage the unborn child
H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child
H362 - May cause harm to breast-fed children
H372 - Causes damage to organs through prolonged or repeated exposure
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
P273 - Avoid release to the environment
P391 - Collect spillage
P501 - Dispose of contents and container in accordance with local, regional, national, and international regulations as applicable

Legend

ACGIH	American Conference of Governmental Industrial Hygienists
AIDII	Italian Association of Industrial Hygienists
ADN	Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Europe)
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road (Europe)
AIIC	Australian Inventory of Industrial Chemicals
ATE	Acute Toxicity Estimate
ASTM	American Society for the Testing of Materials
bar	Biological Reference Values for Chemical Compounds in the Work Area
BAT	Biological tolerance values for occupational exposure

BEL	Biological exposure limits
bw	Body weight
Ceiling	Maximum limit value
CLP	Classification, Labelling and Packaging Regulation; Regulation (EC) No 1272/2008
CMR	Carcinogen, Mutagen or Reproductive Toxicant
DFG	German Research Foundation
DOT	Department of Transportation (United States)
DSL	Domestic Substances List (Canada)
ECHA	European Chemicals Agency
EC Number	European Community number
EmS	Emergency Schedule
ENCS	Existing and New Chemical Substances (Japan)
EPA	U.S. Environmental Protection Agency
EWC	European Waste Codes
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organisation
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organisation for Standardisation
KECI	Korean Existing Chemicals Inventory
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
MAK	Maximum Concentration at the Workplace
MAL	Measuring Technical Hygienic Air Needs
MARPOL	International Convention for the Prevention of Pollution from Ships
MDLPS	Ministry of Labour and Social Policy
n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOELR	No Observable Effect Loading Rate
NZIoC	New Zealand Inventory of Chemicals
OECD	Organization for Economic Cooperation and Development
OEL	Occupational exposure limits
PBT	Persistent, Bioaccumulative and Toxic substance
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PMT	Persistent, Mobile and Toxic
PPE	Personal protective equipment
QSAR	Quantitative Structure Activity Relationship
REACH	Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) Regulation (EC 1907/2006)
RID	Agreement concerning the International Carriage of Dangerous Goods by Rail (Europe)
SADT	Self-Accelerating Decomposition Temperature
SAR	Structure-activity relationship
SDS	Safety Data Sheet
SL	Surface Limit
STEL	Short Term Exposure Limit
STOT RE	Specific target organ toxicity - Repeated exposure
STOT SE	Specific target organ toxicity - Single exposure
SVHC	Substance of very high concern
TCSI	Taiwan Chemical Substance Inventory
TDG	Transport of Dangerous Goods (Canada)

TRGS	Technical Rule for Hazardous Substances
TSCA	Toxic Substances Control Act (United States)
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile organic compounds
vPvB	Very Persistent and Very Bioaccumulative
vPvM	Very Persistent and Very Mobile
As	Allergenic substance
DS	Dermal Sensitizer
Ot	Ototoxicant
pOt	Ototoxicant - potential to cause hearing disorders
PS	Photosensitiser
RS	Respiratory Sensitiser
S	Sensitiser
poS	Sensitizer - capable of causing occupational asthma
Sa	Simple asphyxiant
Sd	Skin designation
pSd	Skin designation - potential for cutaneous absorption
Sdv	Skin designation - vacated
Sk	Skin notation
dSk	Skin notation - danger of cutaneous absorption
pSk	Skin notation - potential for cutaneous absorption

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Chronic aquatic toxicity	Calculation method
Acute aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS

U.S. Agency for Toxic Substances and Disease Registry (ATSDR)
 U.S. Environmental Protection Agency ChemView Database
 European Food Safety Authority (EFSA)
 European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
 European Chemicals Agency (ECHA) (ECHA_API)
 U.S. Environmental Protection Agency
 Acute Exposure Guideline Level(s) (AEGl(s))
 U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
 U.S. Environmental Protection Agency High Production Volume Chemicals
 Food Research Journal
 Hazardous Substance Database
 International Uniform Chemical Information Database (IUCLID)

Japan GHS Classification

Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)

NIOSH (National Institute for Occupational Safety and Health)

National Library of Medicine's ChemID Plus (NLM CIP)

National Library of Medicine's PubMed database (NLM PUBMED)

U.S. National Toxicology Program (NTP)

New Zealand's Chemical Classification and Information Database (CCID)

International Organization for Economic Co-operation and Development (OECD) Environment, Health, and Safety Publications

International Organization for Economic Co-operation and Development (OECD) High Production Volume Chemicals Program

International Organization for Economic Co-operation and Development (OECD) Screening Information Data Set

United Nations World Health Organization (WHO)

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Disclaimer

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End of Safety Data Sheet