SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008

Revision date 23-Apr-2026 **Revision Number** 2.02

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

1.1. Product identifier

Product Code(s) 5190-9769

Product Name ICH/USP Oral Target Elements Standard D

Form Not applicable

Substance Name
Pure substance/mixture Mixture

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

Recommended use Reagents and Standards for Analytical Chemical Laboratory Use. This product is for research and development only.

Uses advised against Do not use outside of recommended applications

1.3. Details of the supplier of the safety data sheet

Supplier

Agilent Technologies LDA UK Ltd.
5500 Lakeside Cheadle Royal Business Park,
Cheadle, Cheshire, SK8 3GR
United Kindgom

+44 (0) 345 712 5292

For further information, please contact

E-mail address pdl-msds_author@agilent.com

1.4. Emergency telephone number

Emergency Telephone CHEMTREC®: +44 20 3807 3798

Emergency Telephone - §45 - (EC)1272/2008	
Europe	**112**
Austria	No information available

Bulgaria	
Croatia	
Cyprus	
Czech Republic	
Denmark	
France	
Hungary	
Ireland	
Italy	
Lithuania	
Luxembourg	
Netherlands	
Norway	
Portugal	
Romania	
Slovakia	
Slovenia	
Spain	
Sweden	
Switzerland	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Corrosive to metals	Category 1 - (H290)
Skin irritation	Category 2 - (H315)
Serious eye damage	Category 1 - (H318)
Hazardous to the aquatic environment - acute	Category 1 - (H400)
Hazardous to the aquatic environment - chronic	Category 1 - (H410)

2.2. Label elements

Contains Nitric acid; Hydrofluoric Acid

Signal word
Danger

Hazard statements
H290 - May be corrosive to metals.
H315 - Causes skin irritation.
H318 - Causes serious eye damage.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary Statements - EU (§28, 1272/2008)
P264 - Wash face, hands and any exposed skin thoroughly after handling
P273 - Avoid release to the environment
P280 - Wear protective gloves, eye protection and face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor
P391 - Collect spillage

2.3. Other hazards

Other hazards No information available.

PBT or vPvB properties The mixture does not contain any substances meeting the PBT or vPvB criteria according to Regulation (EC) No 1907/2006, Annex XIII.

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

Chemical name	EU - REACH (1907/2006) - Article 59(1) - Candidate List of Substances of Very High Concern (SVHC) for Authorisation	EU - REACH (1907/2006) - Endocrine Disruptor Assessment List of Substances
Nitric acid	-	-
Chromic nitrate nonahydrate	-	-
Tin	-	-
Molybdenum	-	-
Copper	-	-
Barium nitrate	-	-
Antimony	-	-
Hydrofluoric Acid	-	-
Lithium Carbonate	-	-

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Chemical nature aqueous solution.

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
Nitric acid 7697-37-2	3 - <5	-	231-714-2	Met. Corr. 1 (H290) Ox. Liq. 2 (H272) Acute Tox. 3 (H331) Skin Corr. 1A (H314) (EUH071)	Ox. Liq. 2 :: C>=99% Ox. Liq. 3 :: C≥65% Skin Corr. 1A :: C>=20% Skin Corr. 1B :: 5%<=C<20%	-	-	B
Chromic nitrate nonahydrate 7789-02-8	1 - <3	-	616-540-0	Ox. Sol. 3 (H272) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Aquatic Chronic 3 (H412)	-	-	-	-
Tin 7440-31-5	0.1 - 1	-	231-141-8	-	-	-	-	-
Molybdenum 7439-98-7	0.1 - 1	-	231-107-2	-	-	-	-	-
Copper 7440-50-8	0.1 - 1	-	231-159-6	Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	-	10	1	-
Barium nitrate 10022-31-8	0.1 - 1	-	233-020-5 (056-002-00-7)	Ox. Sol. 2 (H272) Acute Tox. 3 (H301) Acute Tox. 4 (H332) Eye Irrit. 2 (H319)	-	-	-	A,1
Antimony 7440-36-0	0.1 - 1	-	231-146-5	Carc. 2 (H351) STOT RE 2 (H373)	-	-	-	-
Hydrofluoric Acid	0.1 - 1	-	231-634-8	Acute Tox. 2 (H300)	Eye Irrit. 2 ::	-	-	-

7664-39-3			(009-002-00-6)	Acute Tox. 1 (H310) Acute Tox. 2 (H330) Skin Corr. 1A (H314)	0.1%<=C<1% Skin Corr. 1A :: C>=7% Skin Corr. 1B :: 1%<=C<7%			
Lithium Carbonate 554-13-2	<0.1	-	209-062-5	Acute Tox. 4 (H302) Eye Irrit. 2 (H319)	-	-	-	-

- Substances contained in this mixture with No registration number are under the REACH threshold in Article 6(1) and not subject to the registration requirements according to REACH Title II

CLP Notes:

Note A - Without prejudice to Article 17(2) of Regulation (EC) No 1272/2008, the name of the substance must appear on the label in the form of one of the designations given in Part 3 of Annex VI to that Regulation. In that Part, use is sometimes made of a general description such as "... compounds" or "... salts". In this case, the supplier who places such a substance on the market is required to state on the label the correct name, due account being taken of Section 1.1.1.4 of Annex VI to Regulation (EC) No 1272/2008.

Note B - Some substances (acids, bases, etc.) are placed on the market in aqueous solutions at various concentrations and, therefore, these solutions require different classification and labelling since the hazards vary at different concentrations. In Part 3 entries with Note B have a general designation of the following type: 'nitric acid … %'. In this case the supplier must state the percentage concentration of the solution on the label. Unless otherwise stated, it is assumed that the percentage concentration is calculated on a weight/weight basis.

Note 1 - The concentration stated or, in the absence of such concentrations, the generic concentrations set out in this Regulation are the percentages by weight of the metallic element calculated with reference to the total weight of the mixture.

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

Acute Toxicity Estimate

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
Nitric acid 7697-37-2	No data available	No data available	No data available	2.65	No data available
Chromic nitrate nonahydrate 7789-02-8	3250	No data available	No data available	No data available	No data available
Tin 7440-31-5	700	2002	No data available	No data available	No data available
Molybdenum 7439-98-7	No data available	2002	No data available	No data available	No data available
Barium nitrate 10022-31-8	300	No data available	1.1149	No data available	No data available
Antimony 7440-36-0	100	No data available	No data available	No data available	No data available
Hydrofluoric Acid 7664-39-3	No data available	No data available	No data available	No data available	482.8875

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
Lithium Carbonate 554-13-2	525	3003	2.002	No data available	No data available

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

Additional information
The concentration of the acid stated in this SDS is calculated as an absolute mass concentration (%w/v). This is less than the acid concentration stated on the product label and COA, which reflects a percent value of the commercially available concentrated aqueous form of the acid.

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur. Rinse mouth. Do NOT induce vomiting.

Eye contact Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get immediate medical attention. Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a doctor.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists. Rinse immediately with plenty of water and seek medical advice.

Ingestion Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a doctor.

Self-protection of the first aider Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

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

Symptoms Burning sensation. May cause blindness. May cause redness and tearing of the eyes. Erythema (skin redness). Corrosive to the respiratory tract.

Effects of Exposure Contact with moist mucous membranes of the respiratory system can cause burns and lung damage.

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.
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	Thermal decomposition can lead to release of toxic and corrosive gases/vapours.
Hazardous combustion products	No information available.

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 protective equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Attention! Corrosive material.
Other information	Refer to protective measures listed in Sections 7 and 8.
For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions	Prevent further leakage or spillage if safe to do so.

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	Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labelled containers. Clean contaminated surface thoroughly.
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. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse.
General hygiene considerations	Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work. Wear suitable gloves and eye/face protection. Regular cleaning of equipment, work area and clothing is recommended.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions	Please refer to the manufacturer's certificate for specific storage and transport temperature conditions. Store only in the original receptacle unless other advice is given on the CoA. Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.
Storage class (TRGS 510)	LGK 10.

7.3. Specific end use(s)

Risk Management Methods (RMM)	The information required is contained in this Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	European Union	Austria	Belgium	Bulgaria	Croatia
Nitric acid 7697-37-2	STEL: 1 ppm; STEL: 2.6 mg/m³;	TWA-TMW: 1 ppm; TWA-TMW: 2.6 mg/m³; STEL-KZGW: 1 ppm (); STEL-KZGW: 2.6 mg/m³ (); Ceiling: 1 ppm; Ceiling: 2.6 mg/m³;	STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL-KGVI: 1 ppm; STEL-KGVI: 2.6 mg/m³;
Chromic nitrate nonahydrate 7789-02-8	-		TWA: 0.5 mg/m³;	-	-
Tin 7440-31-5	TWA: 2 mg/m³;	TWA-TMW: 2 mg/m³; inhalable fraction STEL-KZGW: 4 mg/m³ (4 X 15 min); inhalable fraction	TWA: 2 mg/m³; Sd	TWA: 0.1 mg/m³; TWA: 2.0 mg/m³;	TWA-GVI: 2 mg/m³;
Molybdenum 7439-98-7	-	TWA-TMW: 10 mg/m³; inhalable fraction STEL-KZGW: 20 mg/m³ (2 X 60 min); inhalable fraction	TWA: 10 mg/m³;	TWA: 10.0 mg/m³;	TWA-GVI: 10 mg/m³; STEL-KGVI: 20 mg/m³;
Copper 7440-50-8	-	TWA-TMW: 1 mg/m³; inhalable fraction TWA-TMW: 0.1 mg/m³; respirable fraction, smoke STEL-KZGW: 4 mg/m³ (4 X 15 min); inhalable fraction STEL-KZGW: 0.4 mg/m³ (4 X 15 min); respirable fraction, smoke	TWA: 0.2 mg/m³; fume TWA: 1 mg/m³; dust and fume	TWA: 0.1 mg/m³; metal vapor	TWA-GVI: 0.2 mg/m³; fume TWA-GVI: 1 mg/m³; dust STEL-KGVI: 2 mg/m³; dust
Barium nitrate 10022-31-8	TWA: 0.5 mg/m³;	TWA-TMW: 0.5 mg/m³; inhalable fraction STEL-KZGW: 2 mg/m³ (4 X 15 min); inhalable fraction	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³;	TWA-GVI: 0.5 mg/m³;
Antimony 7440-36-0	-	TWA-TMW: 0.5 mg/m³; inhalable fraction STEL-KZGW: 5 mg/m³ (1 X 30 min); inhalable fraction	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³;	TWA-GVI: 0.5 mg/m³;
Hydrofluoric Acid 7664-39-3	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	TWA-TMW: 1.8 ppm; TWA-TMW: 1.5 mg/m³; STEL-KZGW: 3 ppm (4 X 15 min); STEL-KZGW: 2.5 mg/m³ (4 X 15 min); Sk	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	TWA-GVI: 1.8 ppm; TWA-GVI: 1.5 mg/m³; STEL-KGVI: 3 ppm; STEL-KGVI: 2.5 mg/m³;

Chemical name	Cyprus	Czech Republic	Denmark	Estonia	Finland
Nitric acid 7697-37-2	STEL: 1 ppm; STEL: 2.6 mg/m³;	TWA: 1 mg/m³; Ceiling: 2.5 mg/m³;	STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL: 1 ppm; STEL: 2.6 mg/m³;	TWA: 0.5 ppm; TWA: 1.3 mg/m³; STEL: 1 ppm; STEL: 2.6 mg/m³;
Chromic nitrate nonahydrate 7789-02-8	-	TWA: 0.5 mg/m³; inhalable fraction of aerosol Ceiling: 1.5 mg/m³;	-	TWA: 2 mg/m³;	TWA: 0.5 mg/m³;
Tin 7440-31-5	TWA: 2 mg/m³;	TWA: 2 mg/m³; Ceiling: 4 mg/m³;	TWA: 2 mg/m³; STEL: 4 mg/m³;	TWA: 2 mg/m³;	TWA: 2 mg/m³;
Molybdenum 7439-98-7	-	TWA: 5 mg/m³; Ceiling: 25 mg/m³;	TWA: 10 mg/m³; STEL: 20 mg/m³;	TWA: 10 mg/m³; total dust TWA: 5 mg/m³; respirable dust	TWA: 0.5 mg/m³;
Copper 7440-50-8	-	TWA: 1 mg/m³; dust TWA: 0.1 mg/m³; fume Ceiling: 2 mg/m³; dust Ceiling: 0.2 mg/m³; fume	TWA: 1.0 mg/m³; dust and powder TWA: 0.1 mg/m³; fume STEL: 2 mg/m³; dust and powder STEL: 0.2 mg/m³; fume	TWA: 1 mg/m³; total dust TWA: 0.2 mg/m³; fine dust	TWA: 0.02 mg/m³; respirable dust
Barium nitrate 10022-31-8	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³; Ceiling: 2.5 mg/m³;	TWA: 0.5 mg/m³; STEL: 1 mg/m³;	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³;
Antimony 7440-36-0	-	TWA: 0.5 mg/m³; Ceiling: 1.5 mg/m³;	TWA: 0.5 mg/m³; powder STEL: 1 mg/m³; powder	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³;
Hydrofluoric Acid 7664-39-3	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3.0 ppm; STEL: 2.5 mg/m³;	TWA: 1.5 mg/m³; Ceiling: 2.5 mg/m³;	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 2.5 mg/m³; STEL: 3 ppm;	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³; pSk

Chemical name	France	Germany TRGS	Germany DFG	Greece	Hungary
Nitric acid 7697-37-2	STEL-VLCT (indicative): 1 ppm; STEL-VLCT (indicative): 2.6 mg/m³;	TWA-AGW; 1 ppm (); TWA-AGW; 2.6 mg/m³ ();	-	STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL-CK: 2.6 mg/m³; STEL-CK: 1 ppm;
Chromic nitrate nonahydrate 7789-02-8	-	TWA-AGW; 2 mg/m³ (1(I)); inhalable fraction	-	TWA: 0.5 mg/m³;	TWA-AK: 0.5 mg/m³; TWA-AK: 2 mg/m³; STEL-CK: 2 mg/m³; S
Tin 7440-31-5	-	-	-	TWA: 2 mg/m³;	TWA-AK: 2 mg/m³; STEL-CK: 8 mg/m³; pSk

Molybdenum 7439-98-7	-	-	-	TWA: 15 mg/m³;	TWA-AK: 10 mg/m³; TWA-AK: 5 mg/m³; respirable fraction
Copper 7440-50-8	TWA-VME: 0.2 mg/m³; fume TWA-VME: 1 mg/m³; dust STEL-VLCT: 2 mg/m³; dust	TWA-AGW; 0.2 mg/m³ (4(II)); inhalable fraction TWA-AGW; 0.045 mg/m³ (8(II)); respirable fraction	TWA-MAK: 0.01 mg/m³; II(2); respirable fraction	TWA: 0.2 mg/m³; fume TWA: 1 mg/m³; dust STEL: 2 mg/m³; dust	TWA-AK: 0.1 mg/m³; TWA-AK: 0.01 mg/m³; fume; respirable fraction STEL-CK: 0.2 mg/m³;
Barium nitrate 10022-31-8	TWA-VME (indicatif): 0.5 mg/m³;	TWA-AGW; 0.5 mg/m³ (1(I)); inhalable fraction	TWA-MAK: 0.5 mg/m³; II(8); inhalable fraction	TWA: 0.5 mg/m³;	TWA-AK: 0.5 mg/m³;
Antimony 7440-36-0	TWA-VME: 0.5 mg/m³;	-	-	TWA: 0.5 mg/m³;	TWA-AK: 0.5 mg/m³;
Hydrofluoric Acid 7664-39-3	TWA-VME (restrictif): 1.8 ppm; TWA-VME (restrictif): 1.5 mg/m³; STEL-VLCT (restrictif): 3 ppm; STEL-VLCT (restrictif): 2.5 mg/m³;	TWA-AGW; 1 ppm (2(I)); TWA-AGW; 0.83 mg/m³ (2(I)); Sk	TWA-MAK: 1 ppm; I(2); TWA-MAK: 0.83 mg/m³; I(2);	TWA: 3 ppm; TWA: 2.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	TWA-AK: 1.8 ppm; TWA-AK: 1.5 mg/m³; STEL-CK: 2.5 mg/m³; STEL-CK: 3 ppm; pSk
Chemical name	Ireland	Italy MDLPS	Italy AIDII	Latvia	Lithuania
Nitric acid 7697-37-2	STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL: 1 ppm; STEL: 2.6 mg/m³;	TWA: 2 ppm; TWA: 5.2 mg/m³; STEL (REL): 4 ppm; STEL (REL): 10.3 mg/m³;	TWA: 0.78 ppm; TWA: 2 mg/m³; STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL-TPRD: 1 ppm; STEL-TPRD: 2.6 mg/m³;
Chromic nitrate nonahydrate 7789-02-8	TWA: 2 mg/m³; STEL: 6 mg/m³ (calculated);	-	TWA: 0.003 mg/m³; DS RS	TWA: 2 mg/m³;	-
Tin 7440-31-5	TWA: 2 mg/m³; STEL: 6 mg/m³ (calculated);	TWA: 2 mg/m³;	TWA: 2 mg/m³;	TWA: 2 mg/m³;	TWA-IPRD: 2 mg/m³;
Molybdenum 7439-98-7	TWA: 3 mg/m³; respirable fraction STEL: 9 mg/m³ (calculated); inhalable fraction	-	TWA: 10 mg/m³; inhalable fraction TWA: 3 mg/m³; respirable fraction	-	TWA-IPRD: 5 mg/m³; TWA-IPRD: 10 mg/m³; inhalable fraction TWA-IPRD: 5 mg/m³; respirable fraction
Copper 7440-50-8	TWA: 0.2 mg/m³; fume TWA: 1 mg/m³; dusts and mists	-	TWA: 0.2 mg/m³; fume	TWA: 0.5 mg/m³; STEL: 1 mg/m³;	TWA-IPRD: 1 mg/m³; inhalable fraction TWA-IPRD: 0.2

	STEL: 2 mg/m³; dusts and mists STEL: 0.6 mg/m³ (calculated); fume				mg/m³; respirable fraction
Barium nitrate 10022-31-8	TWA: 0.5 mg/m³; STEL: 1.5 mg/m³ (calculated);	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³; pSk	TWA-IPRD: 0.5 mg/m³;
Antimony 7440-36-0	TWA: 0.5 mg/m³; STEL: 1.5 mg/m³ (calculated);	-	TWA: 0.5 mg/m³;	TWA: 0.2 mg/m³; metallic dust STEL: 0.5 mg/m³; metallic dust	TWA-IPRD: 0.5 mg/m³;
Hydrofluoric Acid 7664-39-3	TWA: 1.5 mg/m³; TWA: 1.8 ppm; STEL: 2.5 mg/m³; STEL: 3 ppm; pSk	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	TWA: 0.5 ppm; TWA: 0.4 mg/m³; Ceiling: 2 ppm; Ceiling: 1.6 mg/m³; pSk	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	TWA-IPRD: 1.8 ppm; TWA-IPRD: 1.5 mg/m³; STEL-TPRD: 3 ppm; STEL-TPRD: 2.5 mg/m³;
Chemical name	Luxembourg	Malta	Netherlands	Norway	Poland
Nitric acid 7697-37-2	STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL: 0.5 ppm; STEL: 1.3 mg/m³;	TWA: 2 ppm; TWA: 5 mg/m³; STEL: 4 ppm (value calculated); STEL: 10 mg/m³ (value calculated);	TWA-NDS: 1.4 mg/m³; STEL-NDSCh: 2.6 mg/m³;
Chromic nitrate nonahydrate 7789-02-8	-	TWA: 2 mg/m³;	TWA: 0.06 mg/m³;	TWA: 0.5 mg/m³; STEL: 1.5 mg/m³ (value calculated);	TWA-NDS: 0.5 mg/m³;
Tin 7440-31-5	TWA: 2 mg/m³;	TWA: 2 mg/m³;	TWA: 2 mg/m³;	TWA: 2 mg/m³; STEL: 4 mg/m³ (value calculated);	TWA-NDS: 2 mg/m³; inhalable fraction
Molybdenum 7439-98-7	-	-	-	TWA: 10 mg/m³; STEL: 20 mg/m³ (value calculated);	TWA-NDS: 4 mg/m³; STEL-NDSCh: 10 mg/m³;
Copper 7440-50-8	-	-	TWA: 0.1 mg/m³; inhalable	TWA: 0.1 mg/m³; fume TWA: 1 mg/m³; dust STEL: 3 mg/m³ (value calculated); dust STEL: 0.3	TWA-NDS: 0.2 mg/m³;

				mg/m³ (value calculated); fume	
Barium nitrate 10022-31-8	TWA: 0.5 mg/m³;	-	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³; STEL: 1.5 mg/m³ (except Barium sulfate;value calculated);	TWA-NDS: 0.5 mg/m³;
Antimony 7440-36-0	-	-	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³; STEL: 1.5 mg/m³ (value calculated);	TWA-NDS: 0.5 mg/m³;
Hydrofluoric Acid 7664-39-3	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	STEL: 1.27 ppm; STEL: 1 mg/m³;	TWA: 0.6 ppm; TWA: 0.5 mg/m³; STEL: 1.5 mg/m³ (value from the regulation); STEL: 1.8 ppm (value from the regulation); Sk	TWA-NDS: 0.5 mg/m³; STEL-NDSCh: 2 mg/m³;
Chemical name	Portugal	Romania	Slovakia	Slovenia	Spain
Nitric acid 7697-37-2	TWA (VLE-MP): 2 ppm; STEL (VLE-CD): 1 ppm; STEL (VLE-CD): 2.6 mg/m³;	STEL: 1 ppm; STEL: 2.6 mg/m³;	Ceiling: 2.6 mg/m³;	TWA: 1 ppm; TWA: 2.6 mg/m³; STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL (VLA-EC): 1 ppm; STEL (VLA-EC): 2.6 mg/m³;
Chromic nitrate nonahydrate 7789-02-8	TWA (VLE-MP): 0.5 mg/m³;	TWA: 0.5 mg/m³;	-	-	-
Tin 7440-31-5	TWA (VLE-MP): 2 mg/m³;	TWA: 2 mg/m³;	TWA: 2 mg/m³; Ceiling: 4 mg/m³; pSk	TWA: 2 mg/m³; inhalable fraction TWA: 8 mg/m³; inhalable fraction	TWA-(VLA-ED): 2 mg/m³;
Molybdenum 7439-98-7	TWA (VLE-MP): 10 mg/m³; inhalable fraction TWA (VLE-MP): 3 mg/m³; respirable fraction	TWA: 5 mg/m³; STEL: 10 mg/m³;	TWA: 5 mg/m³; respirable fraction TWA: 10 mg/m³; inhalable fraction	-	TWA-(VLA-ED): 10 mg/m³; inhalable fraction TWA-(VLA-ED): 3 mg/m³; respirable fraction
Copper 7440-50-8	TWA (VLE-MP): 0.2 mg/m³; fume TWA (VLE-MP): 1 mg/m³; dust; mist	TWA: 0.5 mg/m³; dust STEL: 0.2 mg/m³; fume STEL: 1.5 mg/m³; dust	TWA: 1 mg/m³; inhalable fraction TWA: 0.2 mg/m³; respirable fraction	-	TWA-(VLA-ED): 0.01 mg/m³; respirable fraction

Barium nitrate 10022-31-8	TWA (VLE-MP): 0.5 mg/m³;	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³;	TWA: 0.5 mg/m³; inhalable fraction STEL: 0.5 mg/m³; inhalable fraction	TWA-(VLA-ED): 0.5 mg/m³;
Antimony 7440-36-0	TWA (VLE-MP): 0.5 mg/m³;	TWA: 0.2 mg/m³; STEL: 0.5 mg/m³;	TWA: 0.5 mg/m³; total dust	-	TWA-(VLA-ED): 0.5 mg/m³;
Hydrofluoric Acid 7664-39-3	TWA (VLE-MP): 1.8 ppm; TWA (VLE-MP): 1.5 mg/m³; STEL (VLE-CD): 3 ppm; STEL (VLE-CD): 2.5 mg/m³; Ceiling (VLE-CM): 2 ppm; pSk	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;	TWA: 1.8 ppm; TWA: 1.5 mg/m³; Ceiling: 2.5 mg/m³;	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³; pSk	TWA-(VLA-ED): 1.8 ppm; TWA-(VLA-ED): 1.5 mg/m³; STEL (VLA-EC): 3 ppm; STEL (VLA-EC): 2.5 mg/m³;

Chemical name	Sweden	Switzerland	United Kingdom
Nitric acid 7697-37-2	TLV-NGV: 0.5 ppm; TLV-NGV: 1.3 mg/m³; STEL (Bindande KGV): 1 ppm; STEL (Bindande KGV): 2.6 mg/m³;	TWA-MAK: 2 ppm; TWA-MAK: 5 mg/m³; STEL-KZGW: 2 ppm; STEL-KZGW: 5 mg/m³;	STEL: 1 ppm; STEL: 2.6 mg/m³;
Chromic nitrate nonahydrate 7789-02-8	TLV-NGV: 0.5 mg/m³; total dust	TWA-MAK: 0.5 mg/m³; inhalable dust S	TWA: 0.5 mg/m³; STEL: 1.5 mg/m³;
Tin 7440-31-5	TLV-NGV: 2 mg/m³; inhalable fraction	TWA-MAK: 0.004 ppm; TWA-MAK: 0.02 mg/m³; inhalable dust TWA-MAK: 0.003 ppm; aerosol, vapour TWA-MAK: 0.015 mg/m³; aerosol, inhalable dust, vapour STEL-KZGW: 0.004 ppm; STEL-KZGW: 0.02 mg/m³; inhalable dust	TWA: 2 mg/m³; STEL: 4 mg/m³;
Molybdenum 7439-98-7	TLV-NGV: 10 mg/m³; total dust TLV-NGV: 5 mg/m³; respirable fraction	TWA-MAK: 10 mg/m³; inhalable dust	TWA: 10 mg/m³; STEL: 20 mg/m³;
Copper 7440-50-8	TLV-NGV: 0.01 mg/m³; respirable fraction	TWA-MAK: 0.1 mg/m³; inhalable dust STEL-KZGW: 0.2 mg/m³; inhalable dust	TWA: 1 mg/m³; dust and mist TWA: 0.2 mg/m³; fume STEL: 0.6 mg/m³; fume STEL: 2 mg/m³; dust and mist
Barium nitrate	TLV-NGV: 0.5 mg/m³; total	TWA-MAK: 0.5 mg/m³;	TWA: 0.5 mg/m³;

10022-31-8	dust	inhalable dust STEL-KZGW: 4 mg/m³; inhalable dust	STEL: 1.5 mg/m³;
Antimony 7440-36-0	TLV-NGV: 0.25 mg/m³; inhalable fraction	TWA-MAK: 0.5 mg/m³; inhalable dust	TWA: 0.5 mg/m³; STEL: 1.5 mg/m³;
Hydrofluoric Acid 7664-39-3	TLV-NGV: 1.8 ppm; TLV-NGV: 1.5 mg/m³; STEL (Bindande KGV): 2 ppm; STEL (Bindande KGV): 1.7 mg/m³;	TWA-MAK: 1 ppm; TWA-MAK: 0.83 mg/m³; STEL-KZGW: 2 ppm; STEL-KZGW: 1.66 mg/m³;	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³;
Lithium Carbonate 554-13-2	STEL (Bindande KGV): 0.02 mg/m³; inhalable fraction	-	-

Biological occupational exposure limits

Chemical name	European Union	Austria	Bulgaria	Croatia	Czech Republic
Hydrofluoric Acid 7664-39-3	-	-	-	8 mg/g Creatinine - urine (Fluorides) - at the end of the work shift 4.0 mg/g Creatinine - urine (Fluorides) - before the start of the work shift in the middle of the week	-
Chemical name	**Denmark**	**Finland**	**France**	**Germany DFG**	**Germany TRGS**
Chromic nitrate nonahydrate 7789-02-8	-	-	2.5 µg/L - urine (Total Chromium) - end of shift at end of workweek	0.6 µg/L - BAR (end of exposure or end of shift) urine	-
Molybdenum 7439-98-7	-	-	-	150 µg/L - BAR (end of exposure or end of shift) urine	-
Barium nitrate 10022-31-8	-	-	-	10 µg/L - BAR (for long-term exposures: at the end of the shift after several shifts) urine	-
Antimony 7440-36-0	-	-	-	0.2 µg/L - BAR (for long-term exposures: at the end of the shift after several shifts) urine	-
Hydrofluoric Acid	-	-	- urine (Fluorides) -	4.0 mg/g Creatinine	4.0 mg/g Creatinine

7664-39-3			beginning of shift - urine (Fluorides) - end of shift	(urine - Fluoride end of shift) 4 mg/L - BAT (end of exposure or end of shift) urine	(urine - Fluoride end of shift)

Chemical name	Hungary	Ireland	Italy MDLPS	Italy AIDII
Hydrofluoric Acid 7664-39-3	7 mg/g Creatinine (urine - Fluoride end of shift) 4 mg/g Creatinine (urine - Fluoride prior to next shift) 42 µmol/mmol Creatinine (urine - Fluoride end of shift) 24 µmol/mmol Creatinine (urine - Fluoride prior to next shift)	-	-	2 mg/g Creatinine - urine (Fluorides) - prior to shift 3 mg/g Creatinine - urine (Fluorides) - end of shift

Chemical name	Latvia	Luxembourg	Romania	Slovakia
Antimony 7440-36-0	-	-	1 mg/L - urine (Antimony) - end of shift	-
Hydrofluoric Acid 7664-39-3	-	-	5 mg/g Creatinine - urine (Fluorine) - end of shift	7 mg/g creatinine (urine - Fluoride end of exposure or work shift) 4 mg/g creatinine (urine - Fluoride prior to shift)

Chemical name	Slovenia	Spain	Switzerland	United Kingdom
Hydrofluoric Acid 7664-39-3	7.0 mg/g Creatinine - urine (Fluoride) - at the end of the work shift 4.0 mg/g Creatinine - urine () - before the next working day	2 mg/L (urine - Fluorides pre-shift) 3 mg/L (urine - Fluorides end of shift)	4 mg/L (urine - Fluoride end of shift) 211 µmol/L (urine - Fluoride end of shift)	-

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
Chromic nitrate nonahydrate 7789-02-8	-	0.32 mg/kg bw/day [4] [6] 0.32 mg/kg bw/day [4] [7]	0.464 mg/m³ [4] [6] 0.619 mg/m³ [4] [7] 0.155 mg/m³ [5] [6] 0.21 mg/m³ [5] [7]
Tin 7440-31-5	-	10 mg/kg bw/day [4] [6]	71 mg/m³ [4] [6]
Molybdenum	-	-	11.7 mg/m³ [4] [6]

Chemical name	Oral	Dermal	Inhalation
7439-98-7			
Copper 7440-50-8	-	137 mg/kg bw/day [4] [6] 273 mg/kg bw/day [4] [7]	-
Antimony 7440-36-0	-	56.4 mg/kg bw/day [4] [6]	0.263 mg/m³ [5] [6]
Hydrofluoric Acid 7664-39-3	-	-	1.5 mg/m³ [4] [6] 2.5 mg/m³ [4] [7] 1.5 µg/m³ [5] [6] 2.5 mg/m³ [5] [7]
Lithium Carbonate 554-13-2	-	64.3 mg/kg bw/day [4] [6] 100 mg/kg bw/day [4] [7]	10 mg/m³ [4] [6] 30 mg/m³ [4] [7]

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
Chromic nitrate nonahydrate 7789-02-8	0.16 mg/kg bw/day [4] [6] 0.16 mg/kg bw/day [4] [7]	0.16 mg/kg bw/day [4] [6] 0.16 mg/kg bw/day [4] [7]	0.116 mg/m³ [4] [6] 0.462 mg/m³ [4] [7] 0.039 mg/m³ [5] [6] 0.154 mg/m³ [5] [7]
Tin 7440-31-5	5 mg/kg bw/day [4] [6]	-	17 mg/m³ [4] [6]
Molybdenum 7439-98-7	3.4 mg/kg bw/day [4] [6]	-	3.33 mg/m³ [4] [6]
Copper 7440-50-8	-	273 mg/kg bw/day [4] [6] 273 mg/kg bw/day [4] [7]	-
Antimony 7440-36-0	28 mg/kg bw/day [4] [6] 1.2 mg/kg bw/day [4] [7]	-	0.08 mg/m³ [5] [6]
Hydrofluoric Acid 7664-39-3	0.01 mg/kg bw/day [4] [6] 0.01 mg/kg bw/day [4] [7]	-	0.03 mg/m³ [4] [6] 0.03 mg/m³ [4] [7] 0.2 mg/m³ [5] [6] 1.25 mg/m³ [5] [7]
Lithium Carbonate 554-13-2	6.43 mg/kg bw/day [4] [6] 19.23 mg/kg bw/day [4] [7]	50 mg/kg bw/day [4] [6] 50 mg/kg bw/day [4] [7]	9.64 mg/m³ [4] [6] 28.92 mg/m³ [4] [7]

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
Chromic nitrate nonahydrate 7789-02-8	22 µg/L	18.2 µg/L	4.4 µg/L	-	-
Molybdenum 7439-98-7	12.7 mg/L	-	2.28 mg/L	-	-
Copper 7440-50-8	6.3 µg/L	-	5.2 µg/L	-	-
Barium nitrate 10022-31-8	115 µg/L 0.115 mg/L	-	11.5 µg/L	-	-
Antimony 7440-36-0	0.113 mg/L	-	0.0113 mg/L	-	-
Hydrofluoric Acid 7664-39-3	0.9 mg/L	-	0.9 mg/L	-	-
Lithium Carbonate 554-13-2	9 mg/L	0.3 mg/L	0.9 mg/L	-	-

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
Chromic nitrate nonahydrate 7789-02-8	0.32 mg/kg sediment dw	32 µg/kg sediment dw	2.29 mg/L	320 µg/kg soil dw	-
Molybdenum 7439-98-7	22600 mg/kg sediment dw	2368 mg/kg sediment dw	21.7 mg/L	9.9 mg/kg soil dw	-
Copper 7440-50-8	87 mg/kg sediment dw	676 mg/kg sediment dw	230 µg/L	65 mg/kg soil dw	-
Barium nitrate 10022-31-8	600 mg/kg sediment dw	-	62.2 mg/L	207.7 mg/kg soil dw	-
Antimony 7440-36-0	11.2 mg/kg sediment dw	2.24 mg/kg sediment dw	2.55 mg/L	37 mg/kg soil dw	-
Hydrofluoric Acid 7664-39-3	-	-	51 mg/L	11 mg/kg soil dw	-
Lithium Carbonate 554-13-2	238.4 mg/kg sediment dw	23.84 mg/kg sediment dw	122.2 mg/L	44.11 mg/kg soil dw	-

8.2. Exposure controls

Personal protective equipment

Eye/face protection	Avoid contact with eyes. Wear safety glasses with side shields (or goggles). Face protection shield. Tight sealing safety goggles.
Hand protection	Wear protective Neoprene™ gloves. The protective gloves to be used must comply with the specifications of (EU) 2016/425. Wear suitable gloves.
Skin and body protection	Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.
Respiratory protection	Appropriate respiratory protection should be selected and used according to the chemical nature, hazards and use of this product and safety requirements of the local jurisdiction.
Recommended filter type:	Various colours. ABEK-P2.
Environmental exposure controls	Do not allow into any sewer, on the ground or into any body of water.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid
Physical state	Liquid
Colour	colourless
Odour	Odourless
Odour threshold	No information available

Property	**Values**	**Remarks • Method**
Melting point / freezing point	No data available	None known
Boiling point or initial boiling point and boiling range	No data available	None known
Flammability	No data available	None known
Lower and upper explosion limit/flammability limit		None known
Lower explosion limit	No data available	
Upper explosion limit	No data available	
Flash point	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature		None known
SADT (°C)	No data available	None known

pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Solubility	No data available	None known
Water solubility	No data available	None known
Partition coefficient n-octanol/water (log value)	No data available	None known
Vapour pressure	No data available	None known
Density and/or relative density	No data available	None known
Bulk density	No data available	
Liquid Density	No data available	
Relative vapour density	No data available	None known
Particle characteristics		
Particle Size	No information available	
Particle Size Distribution	No information available	

9.2. Other information

9.2.1. Information with regards to physical hazard classes
No information available

9.2.2. Other safety characteristics
No information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable under normal conditions.

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.

10.4. Conditions to avoid

Conditions to avoid Exposure to air or moisture over prolonged periods.

10.5. Incompatible materials

Incompatible materials Oxidising agent. Strong acids. Strong bases.

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. Corrosive to the respiratory tract. Contact with moist mucous membranes of the respiratory system can cause burns and lung damage.

Eye contact Specific test data for the substance or mixture is not available. May result in permanent damage including blindness. Causes serious eye damage.

Skin contact Specific test data for the substance or mixture is not available. (based on components). Causes severe burns.

Ingestion Specific test data for the substance or mixture is not available. Ingestion causes burns of the upper digestive and respiratory tracts.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Burning sensation. May cause blindness. May cause redness and tearing of the eyes. Erythema (skin redness). Corrosive to the respiratory tract.

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

ATEmix (oral)	4,681.60 mg/kg
ATEmix (dermal)	5,000.00 mg/kg
ATEmix (inhalation-gas)	99,999.00 ppm
ATEmix (inhalation-vapour)	58.90 mg/L
ATEmix (inhalation-dust/mist)	50.10 mg/L

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Nitric acid	-	-	= 2500 ppm (Rat) 1 h ATE (vapours) = 2.65 mg/L
Chromic nitrate nonahydrate	= 3250 mg/kg (Rat)	-	-
Tin	= 700 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 4.75 mg/L (Rat) 4 h
Molybdenum	-	> 2000 mg/kg (Rat)	> 5.1 mg/L (Rat) 4 h
Copper	-	-	> 5.11 mg/L (Rat) 4 h
Barium nitrate	= 300 mg/kg (Rat)	-	> 1.1 mg/L (Rat) 243 min
Antimony	= 7000 mg/kg (Rat)	-	-
Hydrofluoric Acid	-	-	= 0.79 mg/L (Rat) 1 h
Lithium Carbonate	= 525 mg/kg (Rat)	> 3000 mg/kg (Rabbit)	> 2 mg/L (Rat) 4 h

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

Skin corrosion/irritation Classification based on data available for ingredients. Causes skin irritation.

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes burns. Causes serious eye damage.

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.

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

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

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 disruption for human health 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 Very toxic to aquatic life with long lasting effects.

Aquatic toxicity

Component Information

Chemical name	Fish	Crustacea	Algae/aquatic plants	Toxicity to microorganisms
Copper	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, Cyprinus carpio) LC50: =0.112mg/L (96h, Poecilia reticulata)	EC50: =0.03mg/L (48h, Daphnia magna)	EC50: 0.031 - 0.054mg/L (96h, Pseudokirchneriella subcapitata) EC50: 0.0426 - 0.0535mg/L (72h, Pseudokirchneriella subcapitata)	-
Antimony	LC50: >6.2 - 8.3mg/L (96h, Cyprinodon variegatus)	-	-	-

Hydrofluoric Acid	-	EC50: =270mg/L (48h, Daphnia species)	-	-
Lithium Carbonate	LC50: =30.3mg/L (96h, Oncorhynchus mykiss)	-	-	-

12.2. Persistence and degradability No information available.

12.3. Bioaccumulative potential

Chemical name	Partition coefficient	Bioconcentration factor (BCF)	Trophic magnification factor (TMF)
Nitric acid	-2.3	-	-
Hydrofluoric Acid	-1.4	-	-

12.4. Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment This product does not contain any substances that are assessed to be a PBT or a vPvB.

Chemical name	PBT and vPvB assessment
Nitric acid	Not PBT/vPvB
Chromic nitrate nonahydrate	Not PBT/vPvB
Tin	Not PBT/vPvB
Molybdenum	PBT assessment does not apply
Copper	Not PBT/vPvB
Barium nitrate	Not PBT/vPvB
Antimony	Not PBT/vPvB
Hydrofluoric Acid	Not PBT/vPvB
Lithium Carbonate	Not PBT/vPvB

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

12.7. 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.

SECTION 14: Transport information

IATA

14.1 UN number or ID number	UN3264
14.2 UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric Acid)
Technical Name	Nitric acid, Hydrofluoric Acid
14.3 Transport hazard class(es)	8
14.4 Packing group	III
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	A3, A803
ERG Code	8L
Description	UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric Acid), 8, III

IMDG

14.1 UN number or ID number	UN3264
14.2 UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s.(Nitric acid, Hydrofluoric Acid)
Technical Name	Nitric acid, Hydrofluoric Acid
14.3 Transport hazard class(es)	8
14.4 Packing group	III
14.5 Environmental hazards	Yes
Marine pollutant indicator	M
Marine pollutant name	Copper
14.6 Special precautions for user	
Special Provisions	223, 274
EmS-No.	F-A S-B
Description	UN3264, Corrosive liquid, acidic, inorganic, n.o.s.(Nitric acid, Hydrofluoric Acid), 8, III, Marine pollutant
14.7 Maritime transport in bulk according to IMO instruments	No information available

RID

14.1 UN number or ID number	UN3264
14.2 UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric Acid)
14.3 Transport hazard class(es)	8
14.4 Packing group	III
Description	UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric Acid), 8, III,

	Environmentally Hazardous
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	274
Classification code	C1

ADR

14.1 UN number or ID number	UN3264
14.2 UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric Acid)
14.3 Transport hazard class(es)	8
14.4 Packing group	III
Description	UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric Acid), 8, III, (E), Environmentally Hazardous
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	274
Classification code	C1
Tunnel restriction code	(E)

ADN

14.1 UN number or ID number	UN3264
14.2 UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric Acid)
14.3 Transport hazard class(es)	8
14.4 Packing group	III
Description	UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric Acid), 8, III, Environmentally Hazardous
14.5 Environmental hazard	Yes
14.6 Special precautions for user	
Special Provisions	274
Classification code	C1
Equipment Requirements	PP, EP

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
Chromic nitrate nonahydrate 7789-02-8	RG 10
Copper 7440-50-8	RG 5,RG 20bis,RG 102 RG 1,RG 2,RG 13,RG 15,RG 15bis,RG 15ter,RG 61,RG 65,RG 70,RG 73,RG 75,RG 50

Antimony 7440-36-0	RG 73
Hydrofluoric Acid 7664-39-3	RG 32

Germany
Water hazard class (WGK) slightly hazardous to water (WGK 1)

Chemical Prohibition Ordinance (ChemVerbotsV)
Not applicable.

TA Luft (German Air Pollution Control Regulation)

Chemical name	Number	Class
Chromic nitrate nonahydrate 7789-02-8	5.2.2	Class III
Tin 7440-31-5	5.2.2	Class III
Copper 7440-50-8	5.2.2	Class III
Antimony 7440-36-0	5.2.2	Class III
Hydrofluoric Acid 7664-39-3	5.2.4	Class II

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
Lithium Carbonate 554-13-2	-	-	Fertility Category 2 Development Category 1A 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 8
WPO (GSchV) SR 814.201; WPA (GSchG) SR 814.20 Class A

Major Accidents Ordinance SR 814.012 Not applicable

Chemical name	Threshold quantity
Nitric acid 7697-37-2	20000 kg

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:

Use restricted. See item: 3.

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
Nitric acid 7697-37-2	75	-
Tin 7440-31-5	75	-
Copper 7440-50-8	75	-
Antimony 7440-36-0	75	-
Hydrofluoric Acid 7664-39-3	75	-

Persistent Organic Pollutants

Not applicable

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

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

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	8: Wood preservatives 21: Antifouling products

Explosives Precursors Marketing and Use (2019/1148)
Not applicable.

International Inventories

TSCA	U.S. INVENTORY (TSCA): Listed on inventory. For purposes of 40 CFR 720.36, this product is for Research and Development (R&D) Use Only.
DSL/NDSL	Contact supplier for inventory compliance status
EINECS/ELINCS	Contact supplier for inventory compliance status
ENCS	Contact supplier for inventory compliance status
IECSC	Contact supplier for inventory compliance status
KECL	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AIIC	Contact supplier for inventory compliance status
NZIoC	Contact supplier for inventory compliance status
TCSI	Contact supplier for inventory compliance status

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing Chemicals Inventory
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals
TCSI - Taiwan Chemical Substance Inventory

15.2. Chemical safety assessment

Chemical Safety Report	A Chemical Safety Assessment is not required for this substance

SECTION 16: Other information

Full text of any hazard and/or precautionary statements referred to under Sections 2-15
EUH071 - Corrosive to the respiratory tract
H272 - May intensify fire; oxidiser
H290 - May be corrosive to metals
H300 - Fatal if swallowed
H301 - Toxic if swallowed
H302 - Harmful if swallowed
H310 - Fatal in contact with skin

H314 - Causes severe skin burns and eye damage
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H330 - Fatal if inhaled
H331 - Toxic if inhaled
H332 - Harmful if inhaled
H351 - Suspected of causing cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H412 - Harmful to aquatic life with long lasting effects
P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear protective gloves
P302 + P352 - IF ON SKIN: Wash with plenty of water and soap
P321 - Specific treatment (see supplemental first aid instructions on this label)
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 + P364 - Take off contaminated clothing and wash it before reuse
P280 - Wear protective gloves, protective clothing, eye protection and face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor
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
P234 - Keep only in original packaging
P390 - Absorb spillage to prevent material damage
P406 - Store in corrosion resistant container with a resistant inner liner

Key or legend to abbreviations and acronyms used in the safety data sheet
List may include phrases which are not applicable to this product

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
C	Carcinogen
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	On basis of test data
Serious eye damage/eye irritation	On basis of test data
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
Acute aquatic toxicity	On basis of test data
Chronic aquatic toxicity	On basis of test data
Aspiration hazard	Calculation method
Ozone	Calculation method
Corrosive to metals	On basis of test data

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 National Institute of Technology and Evaluation (NITE)
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)

Revision date 23-Apr-2026

Reason for revision transport, Formulation, Section 15: Regulatory information, Personal protection

Disclaimer
The information contained in this document is based on Agilent’s state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

End of Safety Data Sheet