

SAFETY DATA SHEET

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

1.1. Product identifier

Product Name IV-STOCK-4

Product Description 1000 µg/mL: Ag, Al, B, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, In, K, Li, Mg, Mn, Na, Ni, Pb, Sr, Ti, Zn

Contains Boric acid (H₃BO₃); Silver; Cadmium and compounds (as Cd); Cobalt

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

Recommended Use Laboratory chemicals

Uses advised against No information available

1.3. Details of the supplier of the safety data sheet

Company

Inorganic Ventures
300 Technology Drive
Christiansburg, VA 24073
Phone: 1(800) 669-6799

Email: info@inorganicventures.com

1.4. Emergency telephone number

Chemtrec 1-800-424-9300 (North America)

Chemtrec +1 703-741-5970 (International)

Europe	See above
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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]

GHS

Skin corrosion/irritation	Category 2 - (H315)
Serious eye damage/eye irritation	Category 2 - (H319)
Carcinogenicity	Category 1B - (H350)
Reproductive toxicity	Category 1B - (H360FD)
Hazardous to the aquatic environment - chronic	Category 3 - (H412)
Corrosive to metals	Category 1 - (H290)

2.2. Label elements

Product identifier

Contains Boric acid (H₃BO₃); Silver; Cadmium and compounds (as Cd); Cobalt

**Signal word**

Danger

Hazard statements

H290 - May be corrosive to metals
 H315 - Causes skin irritation
 H317 - May cause an allergic skin reaction
 H318 - Causes serious eye damage
 H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
 H350 - May cause cancer
 H360 - May damage fertility or the unborn child
 H412 - Harmful to aquatic life with long lasting effects
 EUH071 - Corrosive to the respiratory tract

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

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/physician
 P261 - Avoid breathing dust, fume, gas, mist, vapors and spray
 P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
 P304 + P341 - IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
 P308 + P313 - IF exposed or concerned: Get medical advice/attention
 P202 - Do not handle until all safety precautions have been read and understood
 P234 - Keep only in original container

2.3. Other hazards

Other hazards May be harmful if swallowed Toxic to aquatic life
 Ingestion of soluble silver salts may cause argyria, characterized by permanent blue-gray pigmentation of the skin, mucous membranes, and eyes

SECTION 3: Composition/information on ingredients**3.1 Substances**

Chemical name	EC No. (Index No.)	CAS No.	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH registration number
Nitric acid	231-714-2 (007-004-00-1) (007-030-00-3) (078-012-00-0)	7697-37-2	3.5	(EUH071) Skin Corr. 1A (H314) Ox. Liq. 3 (H272) Acute Tox. 3 (H331)	No data available
Aluminum Nitrate, Nonahydrate	-	7784-27-2	1.3903	Eye Dam. 1 (H318)	No data available
Boric acid (H3BO3)	233-139-2 (005-007-00-2)	10043-35-3	0.56364	Repr. 1B (H360FD)	No data available
Lead nitrate	233-245-9 (082-001-00-6)	10099-74-8	0.1599	Acute Tox. 4 (H302) Acute Tox. 4 (H332) Repr. 1A (H360Df) STOT RE 2 (H373)	No data available

				Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	
Thallium(I) nitrate	233-273-1 (081-002-00-9)	10102-45-1	0.13039	Acute Tox. 2 (H300) Acute Tox. 2 (H330) STOT RE 2 (H373) Aquatic Chronic 2 (H411)	No data available
Zinc	231-175-3 (030-001-01-9) (030-001-00-1)	7440-66-6	0.1	Pyr. Sol. 1 (H250) Water-react. 1 (H260) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	No data available
Silver	231-131-3 (047-004-00-9)	7440-22-4	0.1	Repr. 2 (H361f) STOT RE 2 (H373)	No data available
Nickel	231-111-4 (028-002-00-7) (028-002-01-4)	7440-02-0	0.1	Skin Sens. 1 (H317) Carc. 2 (H351) STOT RE 1 (H372)	No data available
Copper	231-159-6 (029-026-00-0)	7440-50-8	0.1	Aquatic Chronic 2 (H411)	No data available
Cobalt	231-158-0 (027-001-00-9)	7440-48-4	0.1	Carc. 1B (H350) Muta. 2 (H341) Repr. 1B (H360F) Resp. Sens. 1 (H334) Skin Sens. 1 (H317) Aquatic Chronic 4 (H413)	No data available
Cadmium and compounds (as Cd)	231-152-8 (048-002-00-0)	7440-43-9	0.1	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)	No data available

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

SECTION 4: First aid measures

4.1. Description of first aid measures

General Advice	Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.
Inhalation	Call a physician or poison control center immediately. Remove to fresh air. If breathing is difficult, give oxygen. If breathing is irregular or stopped, administer artificial respiration. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.
Skin Contact	Immediate medical attention is required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
Eye Contact	Immediate medical attention is required. Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.
Ingestion	Immediate medical attention is required. Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person.
Self-protection of the first aider	Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

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

Most Important Symptoms and Effects Burn. Difficulty in breathing.

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

Notes to Physician Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure

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

Thermal decomposition can lead to release of irritating gases and vapors

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective suit. Use personal protection equipment.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures****Personal Precautions**

Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Use personal protective equipment as required. Do not get in eyes, on skin, or on clothing.

Advice for emergency responders

Ensure adequate ventilation.

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system. Prevent product from entering drains. 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 Take up mechanically, placing in appropriate containers for disposal.

6.4. Reference to other sections

See Section 12: ECOLOGICAL INFORMATION.

SECTION 7: Handling and storage

7.1. Precautions for safe handling**Advice on safe handling**

Ensure adequate ventilation.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended.

7.2. Conditions for safe storage, including any incompatibilities**Storage Conditions**

Keep container tightly closed in a dry and well-ventilated place.

7.3. Specific end use(s)**SECTION 8: Exposure controls/personal protection****8.1. Control parameters****Exposure Limits**

Chemical name	European Union	United Kingdom	France	Spain	Germany DFG
Nitric acid 7697-37-2	STEL: 1 ppm; STEL: 2.6 mg/m ³ ;	STEL: 1 ppm; STEL: 2.6 mg/m ³ ;	STEL-VLCT (indicatif): 1 ppm; STEL-VLCT (indicatif): 2.6 mg/m ³ ;	STEL (VLA-EC): 1 ppm; STEL (VLA-EC): 2.6 mg/m ³ ;	
Aluminum Nitrate, Nonahydrate 7784-27-2		TWA: 2 mg/m ³ ; STEL: 6 mg/m ³ ;	TWA-VME: 2 mg/m ³ ;		
Boric acid (H3BO3) 10043-35-3				TWA-(VLA-ED): 2 mg/m ³ ; STEL (VLA-EC): 6 mg/m ³ ;	TWA-MAK: 10 mg/m ³ ; I(1); inhalable fraction
Lead nitrate 10099-74-8	TWA: 0.03 mg/m ³ ;	TWA: 0.15 mg/m ³ ; STEL: 0.45 mg/m ³ ;	TWA-VME (restrictif): 0.1 mg/m ³ ;	TWA-(VLA-ED): 0.15 mg/m ³ ;	
Thallium(I) nitrate 10102-45-1		TWA: 0.1 mg/m ³ ; STEL: 0.3 mg/m ³ ; pSk		TWA-(VLA-ED): 0.1 mg/m ³ ; pSk	
Zinc 7440-66-6					TWA-MAK: 0.1 mg/m ³ ; I(4); respirable fraction TWA-MAK: 2 mg/m ³ ; I(2); inhalable fraction
Silver 7440-22-4	TWA: 0.1 mg/m ³ ;	TWA: 0.1 mg/m ³ ; STEL: 0.3 mg/m ³ ;	TWA-VME (indicatif): 0 .1 mg/m ³ ;	TWA-(VLA-ED): 0.1 mg/m ³ ;	TWA-MAK: 0.1 mg/m ³ ; II(8); inhalable fraction
Nickel 7440-02-0		TWA: 0.5 mg/m ³ ; STEL: 1.5 mg/m ³ ; pSk poS	TWA-VME: 1 mg/m ³ ;	TWA-(VLA-ED): 1 mg/m ³ ; S	RS
Copper 7440-50-8		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	TWA-VME: 0.2 mg/m ³ ; fume TWA-VME: 1 mg/m ³ ; dust STEL-VLCT: 2 mg/m ³ ; dust	TWA-(VLA-ED): 0.01 mg/m ³ ; respirable fraction	TWA-MAK: 0.01 mg/m ³ ; II(2); respirable fraction
Cobalt 7440-48-4		TWA: 0.1 mg/m ³ ; STEL: 0.3 mg/m ³ ; poS		TWA-(VLA-ED): 0.02 mg/m ³ ; S	Sk RS
Cadmium and compounds (as Cd) 7440-43-9	TWA: 0.001 mg/m ³ ; TWA: 0.004 mg/m ³ ;	TWA: 0.025 mg/m ³ ; STEL: 0.075 mg/m ³ ;	TWA-VME (restrictif): 0.004 mg/m ³ ; inhalable fraction	TWA-(VLA-ED): 0.01 mg/m ³ ; inhalable fraction; non-pyrophoric	Sk

				TWA-(VLA-ED): 0.002 mg/m³; respirable fraction; non-pyrophoric TWA-(VLA-ED): 0.01 mg/m³; pyrophoric TWA-(VLA-ED): 0.002 mg/m³; pyrophoric TWA-(VLA-ED): 0.02 mg/m³; respirable fraction		
Chemical name	Italy MDLPS	Portugal	Netherlands	Finland	Denmark	
Nitric acid 7697-37-2	STEL: 1 ppm; STEL: 2.6 mg/m³;	TWA (VLE-MP): 2 ppm; STEL (VLE-CD): 1 ppm; STEL (VLE-CD): 2.6 mg/m³;	STEL: 0.5 ppm; STEL: 1.3 mg/m³;	TWA: 0.5 ppm; TWA: 1.3 mg/m³; STEL: 1 ppm; STEL: 2.6 mg/m³;	STEL: 1 ppm; STEL: 2.6 mg/m³;	
Aluminum Nitrate, Nonahydrate 7784-27-2				TWA: 0.1 mg/m³;	TWA: 1 mg/m³; STEL: 2 mg/m³;	
Boric acid (H3BO3) 10043-35-3		TWA (VLE-MP): 2 mg/m³; inhalable fraction STEL (VLE-CD): 6 mg/m³; inhalable fraction				
Lead nitrate 10099-74-8	TWA: 0.15 mg/m³;	TWA (VLE-MP): 0.15 mg/m³;	TWA: 0.15 mg/m³;	TWA: 0.1 mg/m³;	TWA: 0.05 mg/m³; STEL: 0.1 mg/m³;	
Thallium(I) nitrate 10102-45-1		TWA (VLE-MP): 0.02 mg/m³; inhalable fraction pSk		TWA: 0.1 mg/m³; pSk	TWA: 0.1 mg/m³; STEL: 0.2 mg/m³; pSk	
Silver 7440-22-4	TWA: 0.1 mg/m³;	TWA (VLE-MP): 0.01 mg/m³;	TWA: 0.1 mg/m³;	TWA: 0.1 mg/m³;	TWA: 0.01 mg/m³; dust and powder STEL: 0.02 mg/m³; dust and powder	
Nickel 7440-02-0		TWA (VLE-MP): 1.5 mg/m³; inhalable fraction		TWA: 0.01 mg/m³; respirable dust	TWA: 0.05 mg/m³; dust and powder STEL: 0.1 mg/m³; dust and powder	
Copper 7440-50-8		TWA (VLE-MP): 0.2 mg/m³; fume TWA (VLE-MP): 1 mg/m³; dust; mist	TWA: 0.1 mg/m³; inhalable	TWA: 0.02 mg/m³; respirable dust	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	
Cobalt 7440-48-4		TWA (VLE-MP): 0.02 mg/m³;	TWA: 0.02 mg/m³; dust and smoke	TWA: 0.02 mg/m³;	TWA: 0.01 mg/m³; dust, fume and powder TWA: 0.01 mg/m³; STEL: 0.02 mg/m³; dust, fume and powder STEL: 0.02 mg/m³;	
Cadmium and compounds (as Cd) 7440-43-9	TWA: 0.001 mg/m³; inhalable fraction TWA: 0.004 mg/m³; inhalable fraction	TWA (VLE-MP): 0.001 mg/m³; inhalable fraction TWA (VLE-MP): 0.004 mg/m³; inhalable fraction	TWA: 0.004 mg/m³;	TWA: 0.004 mg/m³; respirable dust	TWA: 0.001 mg/m³; dust, fume and powder TWA: 0.001 mg/m³; STEL: 0.002 mg/m³; dust, fume and powder STEL: 0.002 mg/m³;	
Chemical name	Sweden	Austria	Switzerland	Poland	Norway	Ireland
Nitric acid 7697-37-2	LLV: 0.5 ppm LLV: 1.3 mg/m³ Binding STL: 1 ppm Binding STL: 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;	TWA-MAK: 2 ppm; TWA-MAK: 5 mg/m³; STEL-KZGW: 2 ppm; STEL-KZGW: 5 mg/m³;	TWA-NDS: 1.4 mg/m³; STEL-NDSch: 2.6 mg/m³;	TWA: 2 ppm; TWA: 5 mg/m³; STEL: 4 ppm (value calculated); STEL: 10 mg/m³ (value calculated);	STEL: 1 ppm; STEL: 2.6 mg/m³;

		Ceiling: 2.6 mg/m ³ ;				
Aluminum Nitrate, Nonahydrate 7784-27-2					TWA: 2 mg/m ³ ; STEL: 4 mg/m ³ (value calculated);	TWA: 2 mg/m ³ ; STEL: 6 mg/m ³ (calculated);
Boric acid (H3BO3) 10043-35-3			TWA-MAK: 1.8 mg/m ³ ; inhalable dust STEL-KZGW: 1.8 mg/m ³ ; inhalable dust			TWA: 2 mg/m ³ ; STEL: 6 mg/m ³ (calculated);
Lead nitrate 10099-74-8		TWA-TMW: 0.1 mg/m ³ ; inhalable fraction STEL-KZGW: 0.4 mg/m ³ (4 X 15 min); inhalable fraction	TWA-MAK: 0.1 mg/m ³ ; inhalable dust STEL-KZGW: 0.8 mg/m ³ ; inhalable dust	TWA-NDS: 0.05 mg/m ³ ; inhalable fraction	TWA: 0.05 mg/m ³ ; dust and fume STEL: 0.15 mg/m ³ (value calculated); dust and fume	TWA: 0.15 mg/m ³ ; STEL: 0.45 mg/m ³ (calculated);
Thallium(I) nitrate 10102-45-1		TWA-TMW: 0.1 mg/m ³ ; inhalable fraction STEL-KZGW: 1 mg/m ³ (1 X 30 min); inhalable fraction	TWA-MAK: 0.1 mg/m ³ ; inhalable dust Sk	TWA-NDS: 0.1 mg/m ³ ; STEL-NDSch: 0.3 mg/m ³ ;	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ (value calculated); Sk	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ (calculated); pSk
Silver 7440-22-4	LLV: 0.1 mg/m ³	TWA-TMW: 0.1 mg/m ³ ; inhalable fraction STEL-KZGW: 0.1 mg/m ³ (1 X 30 min); inhalable fraction Ceiling: 0.1 mg/m ³ ; inhalable fraction	TWA-MAK: 0.1 mg/m ³ ; inhalable dust STEL-KZGW: 0.8 mg/m ³ ; inhalable dust	TWA-NDS: 0.05 mg/m ³ ; inhalable fraction	TWA: 0.1 mg/m ³ ; metal dust and fume STEL: 0.3 mg/m ³ (value calculated); metal dust and fume	TWA: 0.1 mg/m ³ ; STEL: 0.3 mg/m ³ (calculated; metallic);
Nickel 7440-02-0	LLV: 0.5 mg/m ³	TWA-TMW: 0.1mg/ m ³ ; inhalable fraction TWA-TMW: 0.05m g/m ³ ; inhalable fraction TWA-TMW: 0.01m g/m ³ ; respirable fraction STEL-KZGW: 0.4m g/m ³ (4 x 15 min); inhalable fraction STEL-KZGW: 0.2m g/m ³ (4 x 15 min); inhalable fraction STEL-KZGW: 0.04 mg/m ³ (4 x 15 min); respirable fraction C DS RS	TWA-MAK: 0.5 mg/m ³ ; inhalable dust S	TWA-NDS: 0.25 mg/m ³ ;	TWA: 0.05 mg/m ³ ; STEL: 0.15 mg/m ³ (value calculated); As	
Copper 7440-50-8	LLV: 1 mg/m ³ LLV: 0.2 mg/m ³	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);	TWA-MAK: 0.1 mg/m ³ ; inhalable dust STEL-KZGW: 0.2 mg/m ³ ; inhalable dust	TWA-NDS: 0.2 mg/m ³ ;	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: 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

		respirable fraction, smoke				
Cobalt 7440-48-4	LLV: 0.02 mg/m ³ S*	TWA-TMW: 0.5mg/m ³ ; inhalable fraction TWA-TMW: 0.1mg/m ³ ; inhalable fraction STEL-KZGW: 2mg/m ³ (4 x 15 min); inhalable fraction STEL-KZGW: 0.4mg/m ³ (4 x 15 min); inhalable fraction Sk C DS RS	TWA-MAK: 0.05 mg/m ³ ; inhalable dust Sk S	TWA-NDS: 0.02 mg/m ³ ;	TWA: 0.02 mg/m ³ ; fume TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ (value calculated); fume STEL: 0.06 mg/m ³ (value calculated); As	TWA: 0.02 mg/m ³ ; STEL: 0.06 mg/m ³ (calculated);
Cadmium and compounds (as Cd) 7440-43-9	LLV: 0.02 mg/m ³ LLV: 0.005 mg/m ³	TWA-TMW: 0.004 mg/m ³ ; inhalable fraction TWA-TMW: 0.001 mg/m ³ ; inhalable fraction STEL-KZGW: 0.016mg/m ³ (4 x 15 min); inhalable fraction STEL-KZGW: 0.004mg/m ³ (4 x 15 min); inhalable fraction C	TWA-MAK: 0.001 mg/m ³ ; inhalable dust Sk	TWA-NDS: 0.004 mg/m ³ ; inhalable fraction	TWA: 0.001 mg/m ³ ; inhalable fraction STEL: 0.003 mg/m ³ (value calculated); inhalable fraction STEL: 0.003 mg/m ³ (value calculated); except Cadmium oxide; inhalable fraction	TWA: 0.001 mg/m ³ ; inhalable fraction TWA: 0.004 mg/m ³ ; inhalable fraction TWA: 0.001 mg/m ³ ; STEL: 0.003 mg/m ³ (calculated); inhalable fraction STEL: 0.012 mg/m ³ (calculated; applies until 11 July 2027); inhalable fraction STEL: 0.012 mg/m ³ (calculated; applies until July 11, 2027); STEL: 0.03 mg/m ³ (calculated);

Chemical name	European Union	United Kingdom	France	Spain	Germany TRGS
Lead nitrate 10099-74-8	30 µg/100 mL - blood (Lead) - no restriction 15 µg/100 mL - blood (Lead) - no restriction 0.015 mg/m ³ - air (Lead) - 40 hours per week		400 µg/L - blood (Lead) - 300 µg/L - blood (Lead) - 200 µg/L - blood (Lead) - 100 µg/L - blood (Lead) -		
Cobalt 7440-48-4			- blood (Cobalt) - end of shift at end of workweek 0.005 mg/g creatinine - urine (Cobalt) - end of shift at end of workweek	15 µg/L (urine - Cobalt end of workweek) 1 µg/L (blood - Cobalt end of workweek)	
Cadmium and compounds (as Cd) 7440-43-9			0.005 mg/g creatinine - urine (Cadmium) - not critical 0.004 mg/L - blood (Cadmium) - not critical 4 µg/L - blood (Cadmium) - not critical	2 µg/g Creatinine (urine - Cadmium not critical) 5 µg/L (blood - Cadmium not critical)	
Component	Italy MDLPS	Portugal	Netherlands	Finland	Denmark
Cobalt				130 nmol/L (urine -	

7440-48-4 (0.1)				Cobalt after the work phase or shift after a working week or exposure period)	
Cadmium and compounds (as Cd) 7440-43-9 (0.1)				20 nmol/L (urine - Cadmium at the end of a working week; time of day does not matter)	
Chemical name	Austria	Switzerland	Poland	Norway	Ireland
Lead nitrate 10099-74-8	120 µg/100 mL RBC Erythrocyte protoporphyrin - blood (Ethylenediaminetetraacetic acid) - not provided 30 µg/100 mL blood Lead - blood (Ethylenediaminetetraacetic acid) - not provided 3.8 million/µL 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/µL 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				
Nickel 7440-02-0	7 µg/L - urine (spontaneous urine) - after end of work day, at the end of a work week/end of the shift	45 µg/L (urine - Nickel end of shift, and after several shifts (for long-term exposures)) 766.6 nmol/L (urine - Nickel end of shift, and after several shifts (for long-term exposures))			3 µg/L (urine - Nickel after several consecutive working shifts)
Cobalt 7440-48-4	10 µg/L - urine (spontaneous urine) -	30 µg/L (urine - Cobalt end of shift)			15 µg/L (urine - Cobalt end of shift at

	after end of work day, at the end of a work week/end of the shift	509 nmol/L (urine - Cobalt end of shift)			end of workweek) 1 µg/L (blood - Cobalt end of shift at end of workweek)
Cadmium and compounds (as Cd) 7440-43-9	2.5 µg/g Creatinine - urine (N-Acetylglucosaminid ase) - not provided	2 µg/g creatinine (urine - Cadmium no restrictions) 2.01 nmol/mmol creatinine (urine - Cadmium no restrictions)			2 µg/g Creatinine (urine - not critical) 2 µg/g Creatinine (urine - Cadmium not critical)

Derived No Effect Level (DNEL) No information available

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering Measures Ensure adequate ventilation, especially in confined areas. Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Personal protective equipment

Eye/Face Protection

Wear safety glasses with side shields (or goggles).

Hand Protection

Impervious gloves.

Skin and Body Protection

Impervious clothing. Boots. Chemical resistant apron.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn.

Environmental Exposure Controls Prevent product from entering drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Liquid

Appearance

clear /PURPLE

Odor

Odorless

pH - VALUE 1

No data available

Melting point / melting range

No data available

Initial boiling point and boiling range

100 °C / 212 °F

Literary reference

Vapor pressure @20 °C (kPa)

No data available

Relative vapor density

No data available

Relative Density

No data available

Specific gravity - VALUE 1

No data available

Water solubility

Miscible

Literary reference

Partition coefficient: n-octanol/water

No data available

Autoignition temperature

No data available

Decomposition temperature

No data available

Dynamic viscosity - VALUE 1

No data available

Explosive properties

No information available

Oxidizing Properties

No information available

VOC content

No information available

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

No data available.

10.2. Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

10.3. Possibility of hazardous reactions**Hazardous polymerization**

None under normal processing.

Hazardous Reactions

None under normal processing.

10.4. Conditions to avoid

None known.

10.5. Incompatible materials

Bases Cyanides

10.6. Hazardous decomposition products

Nitrogen oxides (NO_x).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Toxicity

Product Information

The product causes burns of eyes, skin and mucous membranes.

Inhalation

Causes burns. Corrosive to respiratory system. Inhaled corrosive substances can lead to a toxic edema of the lungs. Contact with moist mucous membranes of the respiratory system can cause caustic condition resulting in burns. Aspiration may cause pulmonary edema and pneumonitis. Silver in the form of a finely divided dust may cause discoloration in contact with skin, and argyrosis in case of inhalation.

Eye Contact

Causes burns. Silver in the form of a finely divided dust may cause discoloration in contact with skin, and argyrosis in case of inhalation.

Skin Contact

Causes burns. Silver in the form of a finely divided dust may cause discoloration in contact with skin, and argyrosis in case of inhalation.

Ingestion

Can burn mouth, throat, and stomach. Ingestion of soluble silver salts may cause argyria, characterized by permanent blue-gray pigmentation of the skin, mucous membranes, and eyes.

The following ATE values have been calculated for the mixture

ATEmix (oral) 3,497.90 mg/kg

ATEmix (inhalation-dust/mist) 8.63 mg/l

ATEmix (inhalation-vapor) 75.70 mg/l

Unknown acute toxicity

4.8903 % of the mixture consists of ingredient(s) of unknown acute toxicity.

3.5 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.

4.8903 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity.

4.8903 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas).

1.3903 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).

1.3903 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist).

Component Information

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation No information available.

Sensitization No information available.

Mutagenic Effects No information available.

Carcinogenic effects

Chemical name	European Union
Nickel	Carc. 2
Cobalt	Carc. 1B
Cadmium and compounds (as Cd)	Carc. 1B

Reproductive Toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure May cause disorder and damage to the. heart. liver. kidney. blood. Central nervous system.

Nervous system. lungs. Respiratory system.

Target organ effects

Skin, Eyes, Respiratory system.

Aspiration hazard

No information available.

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

Harmful to aquatic life with long lasting effects

Contains 0 % of components with unknown hazards to the aquatic environment

Chemical name	Algae/aquatic plants	Fish	Crustacea
Boric acid (H ₃ BO ₃)			EC50: 115 - 153mg/L (48h, Daphnia magna)
Zinc	EC50: 0.11 - 0.271mg/L (96h, Pseudokirchneriella subcapitata) EC50: 0.09 - 0.125mg/L (72h, Pseudokirchneriella subcapitata)	LC50: 2.16 - 3.05mg/L (96h, Pimephales promelas) LC50: 0.211 - 0.269mg/L (96h, Pimephales promelas) LC50: =2.66mg/L (96h, Pimephales promelas) LC50: =30mg/L (96h, Cyprinus carpio) LC50: =0.45mg/L (96h, Cyprinus carpio) LC50: =7.8mg/L (96h, Cyprinus carpio) LC50: =3.5mg/L (96h, Lepomis macrochirus) LC50: =0.24mg/L (96h, Oncorhynchus mykiss) LC50: =0.59mg/L (96h, Oncorhynchus mykiss) LC50: =0.41mg/L (96h, Oncorhynchus mykiss)	EC50: 0.139 - 0.908mg/L (48h, Daphnia magna)
Silver		LC50: 0.00155 - 0.00293mg/L (96h, Pimephales promelas) LC50: =0.0062mg/L (96h, Oncorhynchus mykiss) LC50: =0.064mg/L (96h, Lepomis macrochirus)	EC50: =0.00024mg/L (48h, Daphnia magna)
Nickel	EC50: =0.18mg/L (72h, Pseudokirchneriella subcapitata) EC50: 0.174 - 0.311mg/L (96h, Pseudokirchneriella subcapitata)	LC50: >100mg/L (96h, Brachydanio rerio) LC50: =1.3mg/L (96h, Cyprinus carpio) LC50: =10.4mg/L (96h, Cyprinus carpio)	EC50: >100mg/L (48h, Daphnia magna) EC50: =1mg/L (48h, Daphnia magna)
Copper	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, Cyprinus carpio) LC50: =0.112mg/L (96h, Poecilia reticulata)	EC50: =0.03mg/L (48h, Daphnia magna)

Cobalt		LC50: >100mg/L (96h, Brachydanio rerio)	
Cadmium and compounds (as Cd)		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

No information available.

12.3. Bioaccumulative potential

No information available.

Chemical name	Partition coefficient
Nitric acid	-2.3
Boric acid (H3BO3)	-1.09

12.4. Mobility in soil**Mobility in soil**

No information available.

12.5. Results of PBT and vPvB assessment

No information available.

Chemical name	PBT and vPvB assessment
Nitric acid	Not PBT/vPvB
Aluminum Nitrate, Nonahydrate	PBT assessment does not apply
Boric acid (H3BO3)	Not PBT/vPvB
Lead nitrate	PBT assessment does not apply
Zinc	Not PBT/vPvB
Silver	PBT assessment does not apply
Nickel	Not PBT/vPvB
Copper	Not PBT/vPvB
Cobalt	Not PBT/vPvB
Cadmium and compounds (as Cd)	PBT assessment does not apply

12.6. Other adverse effects

SECTION 13: Disposal considerations

13.1. Waste treatment methods**Waste from Residues/Unused Products**

Dispose of in accordance with federal, state and local regulations.

Contaminated Packaging Do not reuse empty containers.

Other information Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport information

IMDG

14.1. UN-No	UN3264
14.2. Proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s
14.3. Transport hazard class(es)	8
14.4. Packing Group	III
Description	Not applicable
14.5. Marine Pollutant	None
14.6. Special Provisions	None

No information available Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available

RID

14.1. UN-No	UN3264
14.2. Proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s
14.3. Transport hazard class(es)	8
14.4. Packing Group	III
Description	Not applicable
14.5. Environmental hazard	None
14.6. Special Provisions	None

ADR

14.1. UN-No	UN3264
14.2. Proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s
14.3. Transport hazard class(es)	8
14.4. Packing Group	III
Description	Not applicable
14.5. Environmental hazard	None
14.6. Special Provisions	None

ICAO

14.1. UN-No	UN3264
14.2. Proper Shipping Name	Corrosive liquid, acidic, inorganic, n.o.s
14.3. Hazard Class	8
14.4. Packing Group	III
Description	Not applicable
14.5. Environmental hazard	None
14.6. Special Provisions	None

IATA-DGR

14.1. UN-No	UN3264
14.2. Proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s
14.3. Transport hazard class(es)	8
14.4. Packing Group	III
Description	Not applicable
14.5. Environmental hazard	None
14.6. Special Provisions	None

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****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

International Inventories

All of the components in the product are on the following Inventory lists: U.S.A. (TSCA), Europe (EINECS/ELINCS/NLP), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), China (IECSC), Australia (AICS), Korea (ECL).

TSCA	Complies
EINECS/ELINCS	Complies
DSL/NDSL	Complies
PICCS	Complies
ENCS	Complies
IECSC	Complies
AICS	Complies
KECL	Complies

Legend

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
AICS - Australian Inventory of Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

15.2. Chemical safety assessment

No information available

SECTION 16: Other information**Full text of R-phrases referred to under sections 2 and 3**

No information available

Full text of any hazard and/or precautionary statements referred to under Sections 2-15

EUH071 - Corrosive to the respiratory tract
H250 - Catches fire spontaneously if exposed to air
H260 - In contact with water releases flammable gases which may ignite spontaneously
H272 - May intensify fire; oxidizer
H300 - Fatal if swallowed
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H330 - Fatal if inhaled
H331 - Toxic if inhaled
H332 - Harmful if inhaled
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
H341 - Suspected of causing genetic defects
H350 - May cause cancer
H351 - Suspected of causing cancer
H360Df - May damage the unborn child. Suspected of damaging fertility
H360F - May damage fertility
H360FD - May damage fertility. May damage the unborn child

H361f - Suspected of damaging fertility

H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child

H372 - Causes damage to organs through prolonged or repeated exposure

H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life

H410 - Very toxic to aquatic life with long lasting effects

H411 - Toxic to aquatic life with long lasting effects

H413 - May cause long lasting harmful effects to aquatic life

Revision date 30-Apr-2026

Reason for Revision Not applicable.

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet