

**SAFETY DATA SHEET
SILVER NITRATE 0.02M**

According to Regulation (EC) No 1907/2006, Annex II, as amended. Commission Regulation (EU) No 2015/830 of 28 May 2015.

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

Product name	SILVER NITRATE 0.02M
Product number	1083
REACH registration notes	All the ingredients are listed or exempt.

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

Identified uses	Laboratory reagent.
Uses advised against	No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet**Supplier**Reagent Chemical Services
18 Aston Fields Road
Whitehouse Industrial Estate
Runcorn
Cheshire WA7 3DLT: 01928 716903 (08.30 - 17.00)
F: 01928 716425
E: info@reagent.co.uk**1.4. Emergency telephone number**

Emergency telephone	OHES Environmental Ltd 24-7 Tel. 0333 333 9939 (24 hour)
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SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Classification (EC 1272/2008)**

Physical hazards	Met. Corr. 1 - H290
Health hazards	Not Classified
Environmental hazards	Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410

2.2. Label elements**Pictogram****Signal word**

Warning

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Hazard statements	H290 May be corrosive to metals. H410 Very toxic to aquatic life with long lasting effects.
Precautionary statements	P234 Keep only in original container. P273 Avoid release to the environment. P390 Absorb spillage to prevent material damage. P391 Collect spillage. P406 Store in corrosive resistant container with a resistant inner liner. P501 Dispose of contents/ container in accordance with national regulations.

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

SILVER NITRATE			<0.5%
CAS number: 7761-88-8	EC number: 231-853-9	REACH registration number: 01-2119513705-43-0000	
M factor (Acute) = 1000	M factor (Chronic) = 100		
Classification			
Ox. Sol. 2 - H272			
Met. Corr. 1 - H290			
Skin Corr. 1B - H314			
Eye Dam. 1 - H318			
Aquatic Acute 1 - H400			
Aquatic Chronic 1 - H410			

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	If in doubt, get medical attention promptly. Show this Safety Data Sheet to the medical personnel.
Inhalation	Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Place unconscious person on their side in the recovery position and ensure breathing can take place. Get medical attention.
Ingestion	Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention.
Skin contact	Remove contaminated clothing and rinse skin thoroughly with water. Get medical attention if irritation persists after washing.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes. Get medical attention if irritation persists after washing.
Protection of first aiders	First aid personnel should wear appropriate protective equipment during any rescue.

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

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General information	The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	Spray/mists may cause respiratory tract irritation.
Ingestion	Gastrointestinal symptoms, including upset stomach. Stomach pain. Diarrhoea.
Skin contact	May cause irritation. Itchiness. Redness.
Eye contact	May cause temporary eye irritation. Profuse watering of the eyes. Redness.

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

Notes for the doctor	Treat symptomatically.
Specific treatments	No specific chemical antidote is known to be required after exposure to this product.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards	The product is not combustible but in a fire may release oxygen, which can increase the burning rate of flammable materials.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Nitrous gases (NO _x).

5.3. Advice for firefighters

Protective actions during firefighting	Fight fire with normal precautions from a reasonable distance. Evacuate area. Avoid breathing fire gases or vapours. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Control run-off water by containing and keeping it out of sewers and watercourses. Avoid discharge to the aquatic environment.
Special protective equipment for firefighters	Wear chemical protective suit. Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Avoid inhalation of vapours and contact with skin and eyes. Wash thoroughly after dealing with a spillage.
For emergency responders	Wear suitable protective equipment, including gloves, goggles/face shield, respirator, boots, clothing or apron, as appropriate.

6.2. Environmental precautions

Environmental precautions	Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment.
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6.3. Methods and material for containment and cleaning up

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Methods for cleaning up Wear protective clothing as described in Section 8 of this safety data sheet. Small Spillages: Wipe up with an absorbent cloth and dispose of waste safely. Large Spillages: Stop leak if safe to do so. Contain and absorb spillage with sand, earth or other non-combustible material. Place waste in labelled, sealed containers. Clean contaminated objects and areas thoroughly, observing environmental regulations. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. Wash thoroughly after dealing with a spillage.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimise spills. Keep container tightly sealed when not in use. Avoid discharge to the aquatic environment.

Advice on general occupational hygiene Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Clean equipment and the work area every day.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Keep container tightly closed, in a cool, well ventilated place. Store in corrosive resistant container with a resistant inner liner. Protect from freezing and direct sunlight. Protect containers from damage. Store away from the following materials: Strong alkalis. Strong reducing agents. Strong oxidising agents. Store in a demarcated bunded area to prevent release to drains and/or watercourses.

Storage class Corrosive storage.

7.3. Specific end use(s)

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

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Occupational exposure limits

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Long-term exposure limit (8-hour TWA): WEL 0.01 As Ag mg/m³

WEL = Workplace Exposure Limit

SILVER NITRATE (CAS: 7761-88-8)

DNEL	Workers - Inhalation; Long term systemic effects: 0.016 mg/m ³ General population - Inhalation; Long term systemic effects: 0.006 mg/m ³ General population - Oral; Long term systemic effects: 0.02 mg/kg/day
PNEC	- Fresh water; 0.00004 mg/l - Marine water; 0.00086 mg/l - STP; 0.025 mg/l - Sediment (Freshwater); 438.13 mg/kg - Sediment (Marinewater); 438.13 mg/kg - Soil; 1.41 mg/kg

8.2. Exposure controls

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Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation.

Eye/face protection

Wear chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.

Hand protection

Wear protective gloves. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. To protect hands from chemicals, gloves should comply with European Standard EN374. For exposure up to 8 hours, wear gloves made of the following material: Neoprene. Polyvinyl chloride (PVC). Thickness: ~ 0.4 mm

Other skin and body protection

Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.

Hygiene measures

Good personal hygiene procedures should be implemented. When using do not eat, drink or smoke. Wash at the end of each work shift and before eating, smoking and using the toilet. Wash contaminated clothing before reuse. Clean equipment and the work area every day.

Respiratory protection

Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140. Wear a respirator fitted with the following cartridge: Acid gas filter. Check that the respirator fits tightly and the filter is changed regularly.

Environmental exposure controls

Keep container tightly sealed when not in use. Store in a demarcated bunded area to prevent release to drains and/or watercourses.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Colourless.
Odour	Almost odourless.
Odour threshold	Not determined.
pH	pH (concentrated solution): 4 - 5
Melting point	Approx. 0°C
Initial boiling point and range	Approx. 100°C @ 760 mm Hg
Flash point	Not determined. Scientifically unjustified.
Evaporation rate	Not determined.
Flammability (solid, gas)	Not determined. Scientifically unjustified.
Vapour pressure	Not determined.
Relative density	Approx. 1.0 @ 20°C
Solubility(ies)	Soluble in water.

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Partition coefficient	Not determined.
Auto-ignition temperature	No specific test data are available.
Decomposition Temperature	Not determined.
Viscosity	Not determined.
Explosive properties	Not considered to be explosive.
Explosive under the influence of a flame	No
Oxidising properties	The product contains a substance classified as oxidising.

9.2. Other information

Other information	None.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	May be corrosive to metals.
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10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	The following materials may react strongly with the product: Strong alkalis. Strong reducing agents. Strong oxidising agents.
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10.4. Conditions to avoid

Conditions to avoid	Keep away from heat, sparks and open flame. Avoid freezing.
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10.5. Incompatible materials

Materials to avoid	May be corrosive to metals. Avoid contact with the following materials: Strong alkalis. Strong reducing agents. Strong oxidising agents.
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10.6. Hazardous decomposition products

Hazardous decomposition products	Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Nitrous gases (NOx).
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Notes (oral LD₅₀)	Based on available data the classification criteria are not met.
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Acute toxicity - dermal

Notes (dermal LD₅₀)	Based on available data the classification criteria are not met.
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Acute toxicity - inhalation

Notes (inhalation LC₅₀)	Based on available data the classification criteria are not met.
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Skin corrosion/irritation

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

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

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

Skin sensitisation

Skin sensitisation Based on available data the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity - in vitro Based on available data the classification criteria are not met.

Carcinogenicity

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

IARC carcinogenicity None of the ingredients are listed or exempt.

Reproductive toxicity

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

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

Specific target organ toxicity - single exposure

STOT - single exposure Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard

Aspiration hazard Based on available data the classification criteria are not met.

General information

The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation

Prolonged inhalation of high concentrations may damage respiratory system.

Ingestion

Gastrointestinal symptoms, including upset stomach. Fumes from the stomach contents may be inhaled, resulting in the same symptoms as inhalation.

Skin contact

Prolonged contact may cause dryness of the skin.

Eye contact

May cause temporary eye irritation.

Route of entry

Ingestion Inhalation Skin and/or eye contact

Target organs

No specific target organs known.

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Toxicological effects Based on information from tests with silver nano particles.

Acute toxicity - oral

Notes (oral LD₅₀) LD₅₀ >2000 mg/kg, Oral, Rat

Acute toxicity - dermal

Notes (dermal LD₅₀) LD₅₀ >2000 mg/kg, Dermal, Rat

Acute toxicity - inhalation

Notes (inhalation LC₅₀) LC₅₀ > 0.75 mg/m³, Inhalation, Rat

Skin corrosion/irritation

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Skin corrosion/irritation	Corrosive to skin.
<u>Serious eye damage/irritation</u>	
Serious eye damage/irritation	Causes serious eye damage.
<u>Respiratory sensitisation</u>	
Respiratory sensitisation	Based on available data the classification criteria are not met.
<u>Skin sensitisation</u>	
Skin sensitisation	Based on available data the classification criteria are not met.
<u>Germ cell mutagenicity</u>	
Genotoxicity - in vitro	Based on available data the classification criteria are not met.
Genotoxicity - in vivo	Based on available data the classification criteria are not met.
<u>Carcinogenicity</u>	
Carcinogenicity	Based on available data the classification criteria are not met.
<u>Reproductive toxicity</u>	
Reproductive toxicity - fertility	Based on available data the classification criteria are not met.
Reproductive toxicity - development	Based on available data the classification criteria are not met.
<u>Specific target organ toxicity - single exposure</u>	
STOT - single exposure	No specific test data are available.
<u>Specific target organ toxicity - repeated exposure</u>	
STOT - repeated exposure	No specific test data are available.
<u>Aspiration hazard</u>	
Aspiration hazard	Not anticipated to present an aspiration hazard, based on chemical structure.
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Inhalation	Irritating to respiratory system. Burns can occur.
Ingestion	Corrosive. Causes severe burns.
Skin contact	Causes severe burns.
Eye contact	Causes serious eye damage.

SECTION 12: Ecological Information

Ecotoxicity The product contains a substance which is very toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

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Ecotoxicity Very toxic to aquatic life with long lasting effects.

12.1. Toxicity

Toxicity Aquatic Acute 1 - H400 Very toxic to aquatic life. Aquatic Chronic 1 - H410 Very toxic to aquatic life with long lasting effects.

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Acute toxicity - fish No specific test data are available.

Acute toxicity - aquatic invertebrates No specific test data are available.

Acute toxicity - aquatic plants No specific test data are available.

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Acute aquatic toxicity

LE(C)₅₀ 0.0001 < L(E)C50 ≤ 0.001

M factor (Acute) 1000

Acute toxicity - fish LC₅₀, 96 hours: 0.00012 mg/l, Pimephales promelas (Fat-head Minnow)

Acute toxicity - microorganisms NOEC, : 0.025 mg/l, Activated sludge

Chronic aquatic toxicity

M factor (Chronic) 100

Chronic toxicity - fish early life stage EC₀, 217 days: 0.19 µg/L,

Chronic toxicity - aquatic invertebrates , 21 days: EC10 = 2.14µg/L Silver , Daphnia magna

12.2. Persistence and degradability

Persistence and degradability The product contains inorganic substances which are not biodegradable.

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Persistence and degradability There are no data on the degradability of this product. The product contains only inorganic substances which are not biodegradable.

Stability (hydrolysis) Scientifically unjustified.

12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient Not determined.

SILVER NITRATE

Bioaccumulative potential BCF: ~ 70, Cyprinus carpio (Common carp)

Partition coefficient Scientifically unjustified.

12.4. Mobility in soil

Mobility The product is water-soluble and may spread in water systems.

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Adsorption/desorption coefficient Soil - : K_d = 4023 L/kg (Median) @ °C

12.5. Results of PBT and vPvB assessment

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Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

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Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

Other adverse effects None known.

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Other adverse effects Dangerous for the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information When handling waste, the safety precautions applying to handling of the product should be considered. The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way.

Disposal methods Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labelled with their contents. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

General For limited quantity packaging/limited load information, consult the relevant modal documentation using the data shown in this section.

14.1. UN number

UN No. (ADR/RID) 3082
UN No. (IMDG) 3082
UN No. (ICAO) 3082

14.2. UN proper shipping name

Proper shipping name (ADR/RID) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS SILVER NITRATE)
Proper shipping name (IMDG) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS SILVER NITRATE)
Proper shipping name (ICAO) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS SILVER NITRATE)
Proper shipping name (ADN) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS SILVER NITRATE)

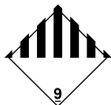
14.3. Transport hazard class(es)

ADR/RID class 9
ADR/RID label 9

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IMDG class 9

ICAO class/division 9

Transport labels**14.4. Packing group**

ADR/RID packing group III

IMDG packing group III

ICAO packing group III

14.5. Environmental hazards**Environmentally hazardous substance/marine pollutant****14.6. Special precautions for user**

EmS F-A, S-F

Hazard Identification Number (ADR/RID) 90

Tunnel restriction code (E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

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

National regulations Health and Safety at Work etc. Act 1974 (as amended).
Control of Substances Hazardous to Health Regulations 2002 (as amended).

EU legislation Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).
Commission Regulation (EU) No 2015/830 of 28 May 2015.

Authorisations (Title VII Regulation 1907/2006) No specific authorisations are known for this product.

Restrictions (Title VIII Regulation 1907/2006) No specific restrictions on use are known for this product.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

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Inventories

EU - EINECS/ELINCS

None of the ingredients are listed or exempt.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet	<p>ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.</p> <p>ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.</p> <p>RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.</p> <p>IATA: International Air Transport Association.</p> <p>ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.</p> <p>IMDG: International Maritime Dangerous Goods.</p> <p>ATE: Acute Toxicity Estimate.</p> <p>CAS: Chemical Abstracts Service.</p> <p>DMEL: Derived Minimal Effect Level.</p> <p>DNEL: Derived No Effect Level.</p> <p>LC₅₀: Lethal Concentration to 50 % of a test population.</p> <p>LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).</p> <p>EC₅₀: 50% of maximal Effective Concentration.</p> <p>PBT: Persistent, Bioaccumulative and Toxic substance.</p> <p>PNEC: Predicted No Effect Concentration.</p> <p>vPvB: Very Persistent and Very Bioaccumulative.</p>
Classification abbreviations and acronyms	<p>Met. Corr. = Corrosive to metals</p> <p>Aquatic Acute = Hazardous to the aquatic environment (acute)</p> <p>Aquatic Chronic = Hazardous to the aquatic environment (chronic)</p>
General information	Only trained personnel should use this material.
Key literature references and sources for data	Source: European Chemicals Agency, http://echa.europa.eu/
Classification procedures according to Regulation (EC) 1272/2008	Aquatic Acute 1 - H400: Aquatic Chronic 1 - H410: : Calculation method. Met. Corr. 1 - H290: : Expert judgement.
Training advice	Read and follow manufacturer's recommendations.
Revision comments	Revised classification.
Revision date	08/01/2018
Revision	3
Supersedes date	20/09/2013
SDS number	10778
SDS status	Approved.
Hazard statements in full	<p>H272 May intensify fire; oxidiser.</p> <p>H290 May be corrosive to metals.</p> <p>H314 Causes severe skin burns and eye damage.</p> <p>H318 Causes serious eye damage.</p> <p>H400 Very toxic to aquatic life.</p> <p>H410 Very toxic to aquatic life with long lasting effects.</p>

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This 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. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.