SAFETY DATA SHEET
SILVER NITRATE 0.02M

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 3DL

T: 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)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification (EC 1272/2008)
Health hazards Not Classified
Environmental hazards Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410

2.2. Label elements
Pictogram

Signal word Warning
SILVER NITRATE 0.02M

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

<table>
<thead>
<tr>
<th>SILVER NITRATE</th>
<th>&lt;0.5%</th>
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<tbody>
<tr>
<td>CAS number:</td>
<td>7761-88-8</td>
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<tr>
<td>EC number:</td>
<td>231-853-9</td>
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<td>REACH registration number:</td>
<td>01-2119513705-43-0000</td>
</tr>
<tr>
<td>M factor (Acute) =</td>
<td>1000</td>
</tr>
<tr>
<td>M factor (Chronic) =</td>
<td>100</td>
</tr>
</tbody>
</table>

Classification
Ox. Sol. 2 - H272
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
SILVER NITRATE 0.02M

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 (NOx).

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.

6.3. Methods and material for containment and cleaning up
SILVER NITRATE 0.02M

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
SILVER NITRATE
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/m³
- General population - Inhalation; Long term systemic effects: 0.006 mg/m³
- 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 (Marine water); 438.13 mg/kg
- Soil; 1.41 mg/kg

8.2. Exposure controls
SILVER NITRATE 0.02M

**Protective equipment**
- Provide adequate general and local exhaust ventilation.

**Appropriate engineering controls**
- Wear chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.

**Eye/face 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

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

**Other skin and body protection**
- 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.
SILVER NITRATE 0.02M

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
None.

SECTION 10: Stability and reactivity

10.1. Reactivity
Reactivity
May be corrosive to metals.

10.2. Chemical stability
Stability
Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.

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.

10.4. Conditions to avoid
Conditions to avoid
Keep away from heat, sparks and open flame. Avoid freezing.

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.

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).

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.

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

Acute toxicity - inhalation
Notes (inhalation LC₅₀)
Based on available data the classification criteria are not met.

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

Serious eye damage/irritation
Notes
Based on available data the classification criteria are not met.
SILVER NITRATE 0.02M

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

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
Based on available data the classification criteria are not met.

IARC carcinogenicity
None of the ingredients are listed or exempt.

Reproductive toxicity
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
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.

**SILVER NITRATE**

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

SILVER NITRATE 0.02M

Skin corrosion/irritation: Corrosive to skin.
Serious eye damage/irritation:
Serious eye damage/irritation: Causes serious eye damage.
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.
Genotoxicity - in vivo: Based on available data the classification criteria are not met.
Carcinogenicity:
Carcinogenicity: Based on available data the classification criteria are not met.
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: No specific test data are available.
Specific target organ toxicity - repeated exposure:
STOT - repeated exposure: No specific test data are available.
Aspiration hazard:
Aspiration hazard: Not anticipated to present an aspiration hazard, based on chemical structure.

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.

SILVER NITRATE

Ecotoxicity:
Very toxic to aquatic life with long lasting effects.

12.1. Toxicity:
Aquatic Acute 1 - H400 Very toxic to aquatic life. Aquatic Chronic 1 - H410 Very toxic to aquatic life with long lasting effects.
SILVER NITRATE 0.02M

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.

SILVER NITRATE

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
EC₅₀, 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.

SILVER NITRATE

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.

SILVER NITRATE

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

12.5. Results of PBT and vPvB assessment
SILVER NITRATE 0.02M

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

SILVER NITRATE

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.

SILVER NITRATE

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
SILVER NITRATE 0.02M

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

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


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.
SILVER NITRATE 0.02M

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
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
ATE: Acute Toxicity Estimate.
CAS: Chemical Abstracts Service.
DMEL: Derived Minimal Effect Level.
LD₅₀: Lethal Dose to 50% of a test population.
LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
EC₅₀: 50% of maximal Effective Concentration.
PBT: Persistent, Bioaccumulative and Toxic substance.
PNEC: Predicted No Effect Concentration.
vPvB: Very Persistent and Very Bioaccumulative.

Classification abbreviations and acronyms
Met. Corr. = Corrosive to metals
Aquatic Acute = Hazardous to the aquatic environment (acute)
Aquatic Chronic = Hazardous to the aquatic environment (chronic)

General information
Only trained personnel should use this material.

Key literature references and sources for data

Classification procedures according to Regulation (EC) 1272/2008

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
H272 May intensify fire; oxidiser.
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
SILVER NITRATE 0.02M

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.