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

1.1. Product identifier

Product form: Substance
Substance name: Silver Nitrate
CAS No: 7761-88-8
Product code: LC22500
Formula: AgNO3
Synonyms: lunar caustic / nitrate of silver / nitric acid silver salt / nitric acid silver(1+) salt / silver mononitrate / Silver nitrate / silver(I) nitrate / silver(I) salt nitric acid
BIG no: 10282

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

Use of the substance/mixture: Laboratory chemical
Chemical intermediate
Water treatment
Oxidant
Photographic chemical: component
Cosmetic product: dyestuff

1.3. Details of the supplier of the safety data sheet

LabChem Inc
Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
16063 Zelienople, PA - USA
T 412-826-5230 - F 724-473-0647
info@labchem.com - www.labchem.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 or 011-703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification
Ox. Sol. 2 H272
Acute Tox. 4 (Oral) H302
Skin Corr. 1B H314
Eye Dam. 1 H318
Aquatic Acute 1 H400
Aquatic Chronic 1 H410

2.2. Label elements

GHS-US labelling
Hazard pictograms (GHS-US): 

Signal word (GHS-US): Danger
Hazard statements (GHS-US): H272 - May intensify fire: oxidiser
H302 - Harmful if swallowed
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

Precautionary statements (GHS-US):
P210 - Keep away from heat, open flames, sparks. - No smoking
P220 - Keep/Store away from combustible materials
P221 - Take any precaution to avoid mixing with combustibles
P264 - Wash exposed skin thoroughly after handling
P270 - Do no eat, drink or smoke when using this product
P273 - Avoid release to the environment
P280 - Wear eye protection, face protection, protective gloves, protective clothing
P301+P312 - IF SWALLOWED: call a POISON CENTER or doctor/physician if you feel unwell
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated
2.3. Other hazards

Other hazards not contributing to the classification: None.

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Nitrate (Main constituent)</td>
<td>(CAS No) 7761-88-8</td>
<td>100</td>
<td>Ox. Sol. 2, H272</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 4 (Oral), H302</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin Corr. 1B, H314</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1, H318</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aquatic Acute 1, H400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 1, H410</td>
</tr>
</tbody>
</table>

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures


First-aid measures after inhalation: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact: Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

First-aid measures after eye contact: Rinse immediately with plenty of water for 15 minutes. Do not apply neutralizing agents. Take victim to an ophthalmologist.


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


Symptoms/injuries after skin contact: Caustic burns/corrosion of the skin.

Symptoms/injuries after eye contact: Corrosion of the eye tissue. Permanent eye damage.


Chronic symptoms: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: May stain the skin. Blue/grey discoloration of the skin. Inflammation/damage of the eye tissue. Visual disturbances. Possible inflammation of the respiratory tract.

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

Obtain medical assistance.
SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: EXTINGUISHING MEDIA FOR SURROUNDING FIRES: All extinguishing media allowed.

Unsuitable extinguishing media: No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard: DIRECT FIRE HAZARD. Non combustible. INDIRECT FIRE HAZARD. Promotes combustion. Reactions involving a fire hazard: see "Reactivity Hazard".

Explosion hazard: INDIRECT EXPLOSION HAZARD. Reactions with explosion hazards: see "Reactivity Hazard".

Reactivity: On burning: release of toxic and corrosive gases/vapours (nitrous vapours). Decomposes on exposure to light. This reaction is accelerated on exposure to impurities. Violent to explosive reaction with many compounds e.g.: with (strong) reducers. Violent to explosive reaction with combustible materials: risk of spontaneous ignition.

5.3. Advice for firefighters

Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.

Firefighting instructions: Cool tanks/drums with water spray/remove them into safety. Cool from behind cover/unmanned monitors. Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.


SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel


Measures in case of dust release: In case of dust production: keep upwind. In case of dust production: consider evacuation. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders

Protective equipment: Equip cleanup crew with proper protection.

Emergency procedures: Ventilate area. Stop release.

6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

For containment: Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray. Take account of toxic/corrosive precipitation water.

Methods for cleaning up: Prevent dispersion by covering with dry sand. Scoop solid spill into closing containers or synthetic bags. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Spill must not return in its original container. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Keep the substance free from contamination. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Avoid raising dust. Keep away from naked flames/heat. Observe very strict hygiene - avoid contact. Keep container tightly closed. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

Hygiene measures: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Incompatible products: Strong bases, combustible materials. Sodium hypochlorite.

Incompatible materials: combustible materials.

Heat and ignition sources: KEEP SUBSTANCE AWAY FROM: heat sources.
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[Storage area] Store in a cool area. Store in a dry area. Store in a dark area. Keep container in a well-ventilated place. Keep locked up. Unauthorized persons are not admitted. Meet the legal requirements. Keep only in the original container.

[Special rules on packaging] SPECIAL REQUIREMENTS: closing. watertight. clean. opaque. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

[Packaging materials] SUITABLE MATERIAL: iron. synthetic material.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Silver Nitrate (7761-88-8)

<table>
<thead>
<tr>
<th></th>
<th>ACGIH TWA (mg/m³)</th>
<th>OSHA PEL (TWA) (mg/m3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA ACGIH</td>
<td>0.01 mg/m³</td>
<td>0.01 mg/m³</td>
</tr>
<tr>
<td>USA OSHA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2. Exposure controls

[Appropriate engineering controls] Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

[Materials for protective clothing] GIVE GOOD RESISTANCE: butyl rubber. neoprene. PVA.

[Hand protection] Gloves.


SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

[Physical state] Solid

[Appearance] Crystalline solid.

[Molecular mass] 169.87 g/mol

[Colour] Colourless to grey. On exposure to light: dark grey to black.

[Odour] Odourless.

[Odour threshold] No data available

[pH] 7.0

[Relative evaporation rate (butylacetate=1)] No data available

[Melting point] 212 °C

[Freezing point] No data available

[Boiling point] 444 °C

[Flash point] Not applicable

[Self Ignition temperature] No data available

[ Decomposition temperature] 444 °C

[Flammability (solid, gas)] No data available

[Vapour pressure] < 0.10 hPa

[Relative vapour density at 20 °C] 5.8

[Relative density] 4.3

[Density] 4352 kg/m³

[Solubility] Soluble in water. Substance sinks in water. Soluble in ammonia. Soluble in glycerol. Water: 144 g/100ml Acetone: 0.40 g/100ml

[Log Pow] 0.19 (Estimated value)

[Log Kow] No data available

[Viscosity, kinematic] No data available

[Viscosity, dynamic] No data available

[Explosive properties] No data available

[Oxidising properties] May intensify fire; oxidiser.

[Explosive limits] No data available
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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

9.2. Other information

VOC content : Not applicable
Other properties : Translucent. Substance has neutral reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: release of toxic and corrosive gases/vapours (nitrous vapours). Decomposes on exposure to light. This reaction is accelerated on exposure to impurities. Violent to explosive reaction with many compounds e.g.: with (strong) reducers. Violent to explosive reaction with combustible materials: risk of spontaneous ignition.

10.2. Chemical stability

Unstable on exposure to light.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Direct sunlight. High temperature.

10.5. Incompatible materials


10.6. Hazardous decomposition products

Nitrogen oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if swallowed.

Silver Nitrate (If) 7761-88-8

| LD50 oral rat | 1173 mg/kg (Rat) |
| Skin corrosion/irritation | Causes severe skin burns and eye damage. pH: 7.0 |
| Serious eye damage/irritation | Causes serious eye damage. pH: 7.0 |
| Respiratory or skin sensitisation | Not classified |
| Germ cell mutagenicity | Not classified |
| Carcinogenicity | Not classified |
| Reproductive toxicity | Not classified |
| Specific target organ toxicity (single exposure) | Not classified |
| Specific target organ toxicity (repeated exposure) | Not classified |
| Aspiration hazard | Not classified |
| Symptoms/injuries after skin contact | Caustic burns/corrosion of the skin. |
| Symptoms/injuries after eye contact | Corrosion of the eye tissue. Permanent eye damage. |
| Chronic symptoms | ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: May stain the skin. Blue/grey discoloration of the skin. Inflammation/damage of the eye tissue. Visual disturbances. Possible inflammation of the respiratory tract. |

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Dangerous for the environment.

Silver Nitrate (7761-88-8)

| LC50 fishes 1 | 0.0039 mg/l (96 h; Pimephales promelas; Flow-through system) |
| EC50 Daphnia 1 | 0.0006 mg/l (48 h; Daphnia magna; LOCOMOTOR EFFECT) |
| LC50 fish 2 | 0.006 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss) |
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<table>
<thead>
<tr>
<th>Silver Nitrate (7761-88-8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50 Daphnia 2</td>
</tr>
<tr>
<td>Threshold limit other aquatic organisms 1</td>
</tr>
<tr>
<td>Threshold limit algae 1</td>
</tr>
<tr>
<td>Threshold limit algae 2</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

Silver Nitrate (7761-88-8)

Persistence and degradability: Biodegradability: not applicable.
Biochemical oxygen demand (BOD): Not applicable
Chemical oxygen demand (COD): Not applicable
ThOD: Not applicable
BOD (% of ThOD): Not applicable

12.3. Bioaccumulative potential

Silver Nitrate (7761-88-8)

BCF fish 1: 11 - 19 (Micropterus salmoides; CHRONIC)
BCF fish 2: 15 - 150 (Lepomis macrochirus; CHRONIC)
Log Pow: 0.19 (Estimated value)
Bioaccumulative potential: Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations: Remove waste in accordance with local and/or national regulations. Recycle/reuse. Remove to an authorized dump (Class I).
Additional information: LWCA (the Netherlands): KGA category 06. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No.(DOT): 1493
DOT NA no.: UN1493

14.2. UN proper shipping name

DOT Proper Shipping Name: Silver nitrate
Hazard labels (DOT): 5.1 - Oxidizing substances

Packing group (DOT): II - Medium Danger
### DOT Special Provisions (49 CFR 172.102)

- **IB8 - Authorized IBCs:** Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2).
- **IP2 - When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle.**
- **IP4 - Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner.**
- **TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.**

### DOT Packaging Exceptions (49 CFR 173.xxx) : 152
### DOT Packaging Non Bulk (49 CFR 173.xxx) : 212
### DOT Packaging Bulk (49 CFR 173.xxx) : 242

### Marine pollutant : P

### 14.3. Additional information

- **State during transport (ADR-RID) :** as solid.

#### Overland transport

- **Packing group (ADR) :** II
- **Class (ADR) :** 5.1 - Oxidizing substances
- **Hazard identification number (Kemler No.) :** 50
- **Classification code (ADR) :** O2
- **Danger labels (ADR) :** 5.1 - Oxidizing substances

#### Transport by sea

- **DOT Vessel Stowage Location :** A - The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel.
- **EmS-No. (1) :** F-A
- **EmS-No. (2) :** S-Q

#### Air transport

- **DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) :** 5 kg
- **DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) :** 25 kg
SECTION 15: Regulatory information

15.1. US Federal regulations

Silver Nitrate (7761-88-8)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

RQ (Reportable quantity, section 304 of EPA's List of Lists): 1 lb

15.2. International regulations

CANADA

Silver Nitrate (7761-88-8)

Listed on the Canadian DSL (Domestic Substances List) inventory.

WHMIS Classification

- Class C - Oxidizing Material
- Class E - Corrosive Material

EU-Regulations

No additional information available

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

- Ox. Sol. 2 H272
- Skin Corr. 1B H314
- Aquatic Acute 1 H400
- Aquatic Chronic 1 H410

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

- O; R8
- C; R34
- N; R50/53

Full text of R-phrases: see section 16

15.2.2. National regulations

Silver Nitrate (7761-88-8)

Listed on the Canadian Ingredient Disclosure List

15.3. US State regulations

No additional information available

SECTION 16: Other information

Full text of H-phrases: see section 16:

- Acute Tox. 4 (Oral): Acute toxicity (oral), Category 4
- Aquatic Acute 1: Hazardous to the aquatic environment — Acute Hazard, Category 1
- Aquatic Chronic 1: Hazardous to the aquatic environment — Chronic Hazard, Category 1
- Eye Dam. 1: Serious eye damage/eye irritation, Category 1
- Ox. Sol. 2: Oxidising Solids, Category 2
- Skin Corr. 1B: Skin corrosion/irritation, Category 1B
- H272: May intensify fire; oxidiser
- H302: Harmful if swallowed
- 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

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<table>
<thead>
<tr>
<th>NFPA health hazard</th>
<th>1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA fire hazard</td>
<td>0 - Materials that will not burn.</td>
</tr>
<tr>
<td>NFPA reactivity</td>
<td>0 - Normally stable, even under fire exposure conditions, and are not reactive with water.</td>
</tr>
<tr>
<td>NFPA specific hazard</td>
<td>OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.</td>
</tr>
</tbody>
</table>

HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur
Flammability : 0 Minimal Hazard
Physical : 0 Minimal Hazard
Personal Protection : F

SDS US (GHS HazCom 2012)

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