CASCADE SILVER CO. SILVER NITRATE SAFETY DATA SHEET

1. Identification of the substance or mixture and of the supplier

1.1 GHS product identifier
   Product name: Silver Nitrate
   Synonyms: Silver (I) Salt; Lunar Caustic

1.2 Recommended use of the chemical and restrictions on use
   Laboratory Chemical
   Industrial Chemical

1.3 Suppliers detail
   Cascade Silver Company
   P.O. Box 3541
   Salem, OR 97302
   503-371-3303

1.4 Emergency phone number
   Chem-Tel 800-255-3924

2.0 Hazards Identification

2.1 GHS Classification
   Oxidizing Solid 2 H272
   Acute Toxicity (oral) 4 H302

2.2 GHS Labeling Elements
   Hazard pictograms

   Signal word : Danger

   Hazard statements : H272 - May intensify fire; oxidizer
                      H302 - Harmful if swallowed

   Precautionary statements : P210 – Keep away from open flames, sparks. – No smoking
                             P220 – Keep/Store away from clothing, combustible materials, combustibles
                             P262 – Do not get in eyes, on skin or on clothing
                             P280 – Wear eye protection, protective gloves
                             P301+P321 – IF SWALLOWED, give a tablespoon of salt in a warm glass of water, repeat until vomit fluid is clear
                             P302+P352 – IF ON SKIN, wash with plenty of water
                             P304+P340 - IF INHALED. Remove person to fresh air and keep comfortable and breathing
                             P305+P351+P338 – IF IN EYES, Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
                             P362+P364 – Take off contaminated clothing and wash it before reuse
                             P370+P378 – In case of fire: Use CO2, dry chemical, foam, water spray for Extinction
                             P501 – Dispose of contents/container to local/regional/national/international regulations

2.3 Other Hazards
   Other hazards not Contributing to classification : None under normal conditions
CASCADE SILVER CO. SILVER NITRATE SAFETY DATA SHEET

3.0 Composition/Information on ingredients

<table>
<thead>
<tr>
<th>Material</th>
<th>CAS Number</th>
<th>%wt or %vol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Nitrate</td>
<td>7761-88-8</td>
<td>99-100%</td>
</tr>
<tr>
<td>Ingredient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver(Ag)</td>
<td>OSHA</td>
<td>PEL</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>STEL</td>
</tr>
<tr>
<td></td>
<td>0.01 mg/m³</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>(metal)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(soluble</td>
<td></td>
</tr>
<tr>
<td></td>
<td>compounds,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>as silver)</td>
<td></td>
</tr>
</tbody>
</table>

4.0 First-aid measures

**Inhalation:** Remove to fresh air. Give oxygen. Keep comfortable and breathing.

**Ingestion:** If conscious, give salt water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Exposure:** Immediately wash with soap and water. Remove contaminated clothing.

**Eye Exposure:** Immediately flush with running water, including under the eyelids, for at least 15 minutes. Remove contact lenses.

5.0 Firefighting measures

**Flash Point:** N/A

**Fire and explosion hazards:** Strong oxidizer. Contact with combustible materials, flammable materials, or powdered metals can cause fire or explosion.

**Fire Extinguishing Media:** Use water spray. Do not use dry chemical, carbon dioxide or Halon. Do not allow water runoff to enter sewers or waterways.

**Special information:** Use protective clothing and breathing equipment with full facepiece operated in positive pressure mode. Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool.

**Unusual Fire and Explosion Hazards:** Strong Oxidizer. Contact with organic materials may cause fire.

**Toxic Gases Produced:** Nitrogen Oxide

**NFPA Rating:** Health- 4; Flammability- 0; Reactivity- 0; Sp Haz- Oxy

5.2 Special hazards arising from the substance or mixture

**Stability:** Stable under ordinary conditions of use and storage.

**Conditions to avoid:** Heat, flame, ignition.

**Hazardous Polymerization:** This substance does not polymerize.

**Incompatibilities:** Acetylene, Ammonium Hydroxide, Ethanol, Charcoal, Ethylene Oxide, Hydrogen Peroxide, Oxalic Acid.

**Hazardous Decomposition Products:** Oxides of Nitrogen.

**Materials to avoid:** Bases, halides, aresenites, antimony salts, combustible matter, reducing agents.
6.0 Accidental release measures

Steps to be taken in case material is leaked or spilled:
Wear self-contained breathing apparatus and full protective clothing. Keep combustibles away from spilled material. With clean shovel, carefully place spilled material into dry, clean container and cover; remove from area. Flush spill area with water. Prevent entry to sewers and public waters. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. CERCLA RQ 1,000 lbs.

Waste Disposal Method: Ensure compliance with local, state and federal regulations.

RCRA Hazardous Waste Number:
Not listed (40 CFR 261.33)

7.0 Handling and storage

7.1 Precautions for safe handling
Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Provide good ventilation in process area.

7.2 Conditions for safe storage
Storage conditions: Store in a cool, dry, ventilated area away from sources of heat, moisture, and incompatible substances.
Incompatible products: Strong acids, strong bases.
Incompatible materials: Sources if ignition. Direct sunlight.

8.0 Exposure controls/personal protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Silver Nitrate (7761-88-8)</th>
<th>USA OSHA</th>
<th>OSHA PEL (TWA) (mg/mg³)</th>
<th>0.01 mg/mg³</th>
</tr>
</thead>
</table>

8.2 Exposure controls

Hand protection: Wear protective gloves
Eye protection: Chemical goggles or safety glasses. Keep eyewash station nearby.
Respiratory protection: Wear approved mask
Other information: When using, do not eat, drink or smoke

9.0 Physical and chemical properties

Appearance: Colorless, transparent large crystals or white small crystals
Odor: Odorless

Water Solubility: 219g/100g Water @ 20⁰ C
Boiling Point: 444 C
Melting Point: 212⁰ C

Density: 4.352 g/cm³
Vapor density (Air=1): 4.4
Vapor Pressure (mm Hg): Very low.
Specific Gravity: 4.35
Percent Volatile by Volume: 0
Evaporation rate: N/A
PH: Ca. 6 (neutral to litmus) 20⁰ C (5.4-6.4)
Thermal Decomposition: >444⁰ C (831F)
Bioconcentration Factor: 200
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10.0 Stability and reactivity

**Stability**: Stable under ordinary conditions of use and storage.
**Conditions to avoid**: Heat, flame, ignition.
**Hazardous Polymerization**: This substance does not polymerize.
**Incompatibilities**: Acetylene, Ammonium Hydroxide, Ethanol, Charcoal, Ethylene Oxide, Hydrogen Peroxide, Oxalic Acid.
**Hazardous Decomposition Products**: Oxides of Nitrogen.
**Materials to avoid**: Bases, Halides, aresenites, antimony salts, combustible matter, reducing agents

11.0 Toxicological information

- ACGIH Threshold Limit Value: 0.01 mg/M³
- OSHA PEL TWA: 0.01 mg/m³
- Oral rat LD50 for silver nitrate: 1,173 mg/kg
- Oral mouse LD50 for silver nitrate: 50 mg/kg
- Intraperitoneal mouse for silver nitrate: 22 mg/kg
- Irritation data, rabbit, std Draize: eye 1 mg, severe
- urr-man LDLo: 29 mg/kg

Investigated as a tumorigen, mutagen, reproductive effector.
Carcinogenicity: None Identified (IARC, NTP, OSHA)

12.0 Ecological information

12.1 Toxicity

<table>
<thead>
<tr>
<th>Silver Nitrate (7761-88-8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
</tr>
<tr>
<td>LC50 fish 2</td>
</tr>
<tr>
<td>EC Daphnia 2</td>
</tr>
<tr>
<td>Threshold limit other aquatic organisms 1</td>
</tr>
<tr>
<td>Threshold limit algae</td>
</tr>
<tr>
<td>Threshold limit algae 2</td>
</tr>
</tbody>
</table>

Mobility in soil: No information available
Other adverse effects: This product should not be discharged into the environment

13.0 Disposal considerations

Waste Disposal Method: Ensure compliance with local, state and federal regulations.
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14.0 Transport information

DOT Transportation Data (49 CFR 172.101): Regulated as Oxidizer 5.1
IATA/ICAO Information: Regulated as Oxidizer 5.1

<table>
<thead>
<tr>
<th>Proper Shipping Name: Silver Nitrate</th>
<th>Packaging Authorizations</th>
<th>Quantity Limitations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Class: Oxidizer 5.1</td>
<td>a) Exceptions: 152</td>
<td>a) Passenger, Aircraft, or Railcar: &lt;5kg</td>
</tr>
<tr>
<td>UN/NA: UN 1493</td>
<td>b) Non-bulk Packaging 212</td>
<td>b) Cargo Aircraft Only: 25 kg</td>
</tr>
<tr>
<td>Packing Group: II</td>
<td>c) Bulk Packaging 242</td>
<td>Note for cargo: 511</td>
</tr>
<tr>
<td>Label: Oxidizer</td>
<td></td>
<td>Vessel Stowage Requirements</td>
</tr>
<tr>
<td>Special Provisions (172.102):</td>
<td>a) Vessel Stowage: A</td>
<td></td>
</tr>
<tr>
<td>IB8,IP4,T3,TP3</td>
<td>b) Other: N/A</td>
<td></td>
</tr>
<tr>
<td>ERG: 140</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15.0 Regulatory information

EPA Regulations:
RCRA Hazardous Waste Number: Not listed
RCRA Hazardous Waste Classification: If this product becomes a waste as defined by RCRA, Title 40 CFR 261, then it is the responsibility of the waste generator to determine the proper waste identification and disposal method.
CERCLA Hazardous substance (40 CFR 302.4) listed specific per RCRA, Sec. 3001; CWA, Sec. 311(b)(4); CWA, Sec. 307(a), CAA, Sec. 112.
CERCLA Reportable Quantity (RQ), 1000 lb.
TSCA: TSCA 8(b) Inventory: Silver Nitrate
RTECS: VW4725000
SARA 313 codes: This product may be subject to the TSCA notification requirements because it contains silver, a toxic chemical constituent.
SARA Toxic Chemical (40 CFR 372.65): Not listed
SARA EHS: Not listed, Threshold Planning Quantity (TPQ)

OSHA Regulations:
Air Containment (29 CFR 1910.1000, Table Z-1,Z-1-A): Not listed

16.0 Other Information

NFPA Hazard Ratings:

| Health  | 3 |
| Flammability | 0 |
| Reactivity  | 0 |
| Special Hazards: | OXY |

Disclaimer:
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