Material Safety Data Sheet
Silver nitrate, 0.1N standard solution

Section 1 - Chemical Product and Company Identification

**MSDS Name:** Silver nitrate, 0.1N standard solution  
**Synonyms:** None.

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>98.3</td>
<td>231-791-2</td>
</tr>
<tr>
<td>7761-88-8</td>
<td>Silver nitrate</td>
<td>1.7</td>
<td>231-853-9</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

**EMERGENCY OVERVIEW**

Appearance: clear, colorless liquid.  
**Danger!** Corrosive. Causes eye and skin burns. May be harmful if swallowed. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. May cause blood abnormalities.  
**Target Organs:** Blood, eyes, skin, mucous membranes.

**Potential Health Effects**

**Eye:** Causes eye burns.  
**Skin:** Causes skin burns. May cause skin discoloration.  
**Ingestion:** May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns.  
**Inhalation:** Causes chemical burns to the respiratory tract.  
**Chronic:** May cause methemoglobinemia, which is characterized by chocolate-brown colored blood, headache, weakness, dizziness, breath shortness, cyanosis (bluish skin due to deficient oxygenation of blood), rapid heart rate, unconsciousness and possible death. Chronic inhalation or ingestion of silver salts may cause argyria characterized by a permanent blue-gray discoloration of the eyes, skin, mucous membranes, and internal organs. This malady results from the accumulation of silver in the body. May cause transient kidney disturbances.
Section 4 - First Aid Measures

**Eyes:** Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).

**Skin:** Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

**Ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation.

**Notes to Physician:** For methemoglobinemia, administer oxygen alone or with Methylene Blue depending on the methemoglobin concentration in the blood.

**Antidote:** Methylene blue, alone or in combination with oxygen is indicated as a treatment in nitrite induced methemoglobinemia.

Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Containers may explode if exposed to fire.

**Extinguishing Media:** For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Cool containers with flooding quantities of water until well after fire is out.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 3; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

Section 7 - Handling and Storage
Handling: Keep container tightly closed. Do not get on skin or in eyes. Avoid ingestion and inhalation. Use with adequate ventilation. Discard contaminated shoes.

Storage: Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
<tr>
<td>Silver nitrate</td>
<td>0.01 mg/m3 TWA (as Ag) (listed under Silver soluble compounds).</td>
<td>0.01 mg/m3 TWA (as Ag) (listed under Silver soluble compounds).</td>
<td>0.01 mg/m3 TWA (listed under Silver soluble compounds).</td>
</tr>
</tbody>
</table>

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear, colorless

Odor: None reported

pH: ~6

Vapor Pressure: 14 mm Hg @20C

Vapor Density: 0.7

Evaporation Rate: >1 (ether=1)

Viscosity: Not available.

Boiling Point: 444 deg C

Freezing/Melting Point: Not available.

Decomposition Temperature: Not available.

Solubility: Completely soluble in water.

Specific Gravity/Density: 1.0-1.1
Molecular Formula: AgNO₃.H₂O
Molecular Weight: 169.8731

Section 10 - Stability and Reactivity

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.
**Conditions to Avoid:** Excess heat.
**Incompatibilities with Other Materials:** Strong reducing agents.
**Hazardous Decomposition Products:** Nitrogen oxides, oxides of silver.
**Hazardous Polymerization:** Has not been reported.

Section 11 - Toxicological Information

**RTECS#:**
CAS# 7732-18-5: ZC0110000
CAS# 7761-88-8: VW4725000

**LD₅₀/LC₅₀:**
CAS# 7732-18-5:
  - Oral, rat: LD₅₀ = >90 mL/kg;

CAS# 7761-88-8:
  - Draize test, rabbit, eye: 1 mg Severe;
  - Draize test, rabbit, eye: 10 mg Moderate;
  - Oral, mouse: LD₅₀ = 50 mg/kg;
  - Oral, rat: LD₅₀ = 1173 mg/kg;

**Carcinogenicity:**
CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 7761-88-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No data available.
**Teratogenicity:** No data available.
**Reproductive Effects:** No data available.
**Mutagenicity:** No data available.
**Neurotoxicity:** No data available.
**Other Studies:**

Section 12 - Ecological Information

No information available.
Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste.

Section 14 - Transport Information

<table>
<thead>
<tr>
<th>IATA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping Name:</td>
<td>CORROSIVE LIQUIDS, N.O.S.</td>
</tr>
<tr>
<td>Hazard Class:</td>
<td>8</td>
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<tr>
<td>UN Number:</td>
<td>UN1760</td>
</tr>
<tr>
<td>Packing Group:</td>
<td>II</td>
</tr>
</tbody>
</table>

Section 15 - Regulatory Information

**Hazard Symbols:**
Not available.

**Risk Phrases:**
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety Phrases:**
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 60 This material and its container must be disposed of as hazardous waste.
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

Section 16 - Additional Information

**MSDS Creation Date:** 5/01/1999
**Revision #3 Date:** 10/05/2004

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