



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

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|--------------------------|---|
| Material name | SILVER NITRATE |
| Version # | 02 |
| Revision date | 08-29-2011 |
| CAS # | 7761-88-8 |
| Product Codes | J.T.Baker: 3426 Macron: 2169 |
| Synonym(s) | Lunar caustic; silver nitrate toughened; Nitric Acid, Silver (I) Salt |
| Manufacturer | Avantor Performance Materials, Inc. |
| Address | 3477 Corporate Parkway Suite #200 Center Valley, PA 18034 US |
| Customer Service | 855-282-6867 |
| 24 Hour Emergency | 908-859-2151 |
| Chemtrec | 800-424-9300 |

2. Hazards Identification

| | |
|--|--|
| Emergency overview | DANGER Strong oxidizer - contact with other material may cause fire. Corrosive. Causes severe skin and eye burns. Causes digestive tract burns. Harmful if swallowed. Dust or vapor extremely irritating to the eyes and respiratory tract. Prolonged exposure may cause chronic effects. |
| OSHA regulatory status | This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication). |
| Potential health effects | |
| Routes of exposure | Ingestion. Inhalation. Skin contact. Eye contact. |
| Eyes | Corrosive. Causes severe eye burns. Dust or splashes from the mixture may cause permanent eye damage. |
| Skin | Corrosive. Causes severe skin burns. This product may discolor the skin. |
| Inhalation | Corrosive. May cause damage to mucous membranes in nose, throat, lungs and bronchial system. |
| Ingestion | Harmful if swallowed. Corrosive. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. |
| Target organs | Eyes. Skin. Respiratory system. Liver. Kidneys. Blood. |
| Chronic effects | Corrosive. Prolonged contact causes serious tissue damage. Liver and/or kidney damage. Risk of damage to blood system. |
| Potential environmental effects | Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. |

3. Composition / Information on Ingredients

| Components | CAS # | Percent |
|-------------------|--------------|----------------|
| SILVER NITRATE | 7761-88-8 | 99 - 100 |

4. First Aid Measures

First aid procedures

| | |
|---------------------|--|
| Eye contact | Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately. In case of irritation from airborne exposure, move to fresh air. Get medical attention immediately. |
| Skin contact | Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician or poison control center immediately. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. |
| Inhalation | Move to fresh air. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Call a physician or poison control center immediately. |
| Ingestion | Call a physician or poison control center immediately. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. |

Notes to physician

Keep victim under observation. Treat symptomatically.

General advice

In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties

This product is not flammable. May intensify fire; oxidizer.

Extinguishing media

| | |
|---------------------------------------|--|
| Suitable extinguishing media | Water spray, fog (flooding amounts). |
| Unsuitable extinguishing media | Dry chemical, CO ₂ , halon. |

Protection of firefighters

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| Specific hazards arising from the chemical | OXIDIZING! May explode from heat or contamination. Contact with combustible material may cause fire. These substances will accelerate burning when involved in a fire. Some will react explosively with hydrocarbons (fuels). Some may decompose explosively when heated or involved in a fire. Runoff may create fire or explosion hazard. Fire may produce irritating, corrosive and/or toxic gases. |
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| Protective equipment and precautions for firefighters | Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires. |
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Specific methods

In the event of fire and/or explosion do not breathe fumes. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out.

6. Accidental Release Measures

Personal precautions

Eliminate all sources of ignition. Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not allow to enter drains, sewers or watercourses.

Methods for containment

Stop leak if you can do so without risk. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up

Keep combustibles (wood, paper, oil, etc.) away from spilled material. Avoid dust formation. Reduce airborne dust and prevent scattering by moistening with water.

Large Spills: Dike far ahead of spill for later disposal. Sweep up or vacuum up spillage and collect in suitable container for disposal.

Small Spills: Sweep up and place in a clearly labeled container for chemical waste. Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations. Collect in a non-combustible container for prompt disposal.

7. Handling and Storage**Handling**

DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Keep away from clothing and other combustible materials. Wear appropriate personal protective equipment. Do not breathe dust. Do not get in eyes, on skin, on clothing. Do not taste or swallow. Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Use only with adequate ventilation. See Section 8 of the MSDS for Personal Protective Equipment.

Storage

Keep away from heat and sources of ignition. Do not store near combustible materials. Keep tightly closed in a dry, cool and well-ventilated place.

8. Exposure Controls / Personal Protection**ACGIH****Material****Type****Value**

SILVER NITRATE (7761-88-8)

TWA

0.0100 mg/m3

Occupational exposure limits**U.S. - OSHA****Material****Type****Value**

SILVER NITRATE (7761-88-8)

PEL

0.0100 mg/m3

Engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment**Eye / face protection**

Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: High-efficiency particulate respirator with full facepiece.

General hygiene considerations

Provide eyewash station and safety shower. Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

General

Wear chemical protective equipment that is specifically recommended by the manufacturer. Launder contaminated clothing before reuse.

9. Physical & Chemical Properties**Appearance**

Crystalline.

Color

Colorless.

Odor

Odorless.

| | |
|---|--------------------|
| Odor threshold | Not available. |
| Physical state | Solid. |
| Form | Crystals. |
| pH | 6 Aqueous solution |
| Melting point | 413.6 °F (212 °C) |
| Freezing point | 413.6 °F (212 °C) |
| Boiling point | 824 °F (440 °C) |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability limits in air, upper, % by volume | Not available. |
| Flammability limits in air, lower, % by volume | Not available. |
| Specific gravity | 4.35 |
| Relative density | Not available. |
| Solubility (water) | Soluble |
| Partition coefficient (n-octanol/water) | Not available |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | 824 °F (440 °C) |
| Molecular weight | 169.87 g/mol |
| Molecular formula | Ag-N-O3 |

10. Chemical Stability & Reactivity Information

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|---|--|
| Chemical stability | Stable, however, may decompose if heated. |
| Conditions to avoid | Heat. Light. Contact with combustibles. |
| Incompatible materials | Organic compounds. Alkalies. Sulfur. |
| Hazardous decomposition products | Nitrogen oxides (NOx). May decompose upon heating to produce corrosive and/or toxic fumes. |
| Possibility of hazardous reactions | Hazardous polymerization does not occur. |

11. Toxicological Information

Toxicological data

| Product | Test Results |
|----------------------------------|--|
| SILVER NITRATE (7761-88-8) | Acute Oral LD50 Rat: 1173 mg/kg |
| Sensitization | Not a skin sensitizer. |
| Acute effects | Harmful if swallowed. |
| Local effects | Causes severe burns. |
| Chronic effects | Corrosive. Prolonged contact causes serious tissue damage. Liver and/or kidney damage. Risk of damage to blood system. |
| Carcinogenicity | This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. |
| Skin corrosion/irritation | Corrosive to skin and eyes. |
| Epidemiology | No epidemiological data is available for this product. |
| Mutagenicity | No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic. |
| Neurological effects | No data available for this product. |
| Reproductive effects | Contains no ingredient listed as toxic to reproduction |

Symptoms and target organs Corrosive effects.

Further information Danger of very serious irreversible effects. Symptoms may be delayed.

12. Ecological Information

Ecotoxicological data

| Product | Test Results |
|--|--|
| SILVER NITRATE (7761-88-8) | EC50 Water flea (<i>Daphnia magna</i>): 0.0008 mg/l 48.00 hours LC50 Fathead minnow (<i>Pimephales promelas</i>): 0 - 0.0072 mg/l 96.00 hours |
| Ecotoxicity | Very toxic to aquatic life with long lasting effects. |
| Persistence and degradability | The product is not readily biodegradable. |
| Partition coefficient (n-octanol/water) | Not available |

13. Disposal Considerations

Disposal instructions Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. All wastes must be handled in accordance with local, state and federal regulations.

Contaminated packaging Since emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

14. Transport Information

DOT

Basic shipping requirements:

UN number UN1493
Proper shipping name Silver nitrate
Hazard class 5.1
Packing group II
Environmental hazards
Marine pollutant Yes
Additional information:
Special provisions IB8, IP4, T3, TP33

Basic shipping requirements:

Labels required 5.1
Additional information:
Packaging exceptions 152
Packaging non bulk 212
Packaging bulk 242
Reportable quantity 1
ERG number 140

IATA

Basic shipping requirements:

UN number 1493
Proper shipping name Silver nitrate
Hazard class 5.1
Packing group II
Additional information:
ERG code 5L

IMDG

Basic shipping requirements:

UN number 1493
Proper shipping name SILVER NITRATE
Hazard class 5.1
Packing group II



DOT



IATA



IMDG

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA (Superfund) reportable quantity

SILVER NITRATE: 1.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 311 hazardous chemical Yes

Clean Water Act (CWA) Hazardous substance
Priority pollutant
Toxic pollutant

Inventory status

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | Yes |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

SILVER NITRATE (CAS 7761-88-8)

Listed.

Saf-T-Data

Health: 3 - Severe (Poison)

Flammability: 0 - None

Reactivity: 3 - Severe (Oxidizer)

Contact: 3 - Severe (Corrosive)

Lab Protective Equip: D - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: Y - Yellow (Reactive)

16. Labeling Info

Label Hazard Warning

DANGER

Strong oxidizer - contact with other material may cause fire.

Corrosive. Causes severe skin and eye burns. Causes digestive tract burns. Harmful if swallowed. Dust or vapor extremely irritating to the eyes and respiratory tract. Prolonged exposure may cause chronic effects.

Label Precautions

Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Do not breathe dust. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.

Label First Aid

Immediately flush eyes with plenty of water for at least 15 minutes. Immediately flush skin with plenty of water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention immediately. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance.

17. Other Information

NFPA ratings

Health: 3

Flammability: 0

Instability: 0

Special hazards: OX

Disclaimer

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