

MSDS Number: S2285 \*\*\*\*\* Effective Date: 04/21/08 \*\*\*\*\* Supersedes: 10/19/05

<b>MSDS</b>	<b>Material Safety Data Sheet</b>	24 Hour Emergency Telephone: 908-450-2151 CHEMTREC: 1-800-424-9300
		National Response in Canada CANUTEC: 613-996-6666
From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		Outside U.S. and Canada Chemtrec: 763-927-3887
Mallinckrodt CHEMICALS		NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.
J.T. Baker		
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.		

## SILVER NITRATE, VOLUMETRIC SOLUTIONS (0.24 - 4.8%)

### 1. Product Identification

**Synonyms:** Lunar caustic solution; silver nitrate volumetric solutions 0.0141 Normal, 0.0171 Normal, 0.0282 Normal, 0.0855 Normal, 0.1 Normal, 0.171 Normal, and 0.282 Normal  
**CAS No.:** 7761-88-8  
**Molecular Weight:** 169.87  
**Chemical Formula:** AgNO<sub>3</sub> (in water)  
**Product Codes:**  
J.T. Baker: 5630  
Mallinckrodt: 6142, H383, H387, H391, H394

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Silver Nitrate	7761-88-8	0.2 - 5%	Yes
Water	7732-18-5	95 - 100%	No

### 3. Hazards Identification

#### Emergency Overview

**WARNING! CAUSES SEVERE EYE IRRITATION. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT. AFFECTS EYES, SKIN AND RESPIRATORY TRACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)  
Flammability Rating: 1 - Slight  
Reactivity Rating: 1 - Slight  
Contact Rating: 2 - Moderate  
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES  
Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

Effects are expected to be less severe than for exposure to higher concentrations where symptoms include severe irritation to the respiratory tract with coughing, wheezing, shortness of breath, nausea, and vomiting. May be absorbed into the body following inhalation with symptoms paralleling those from ingestion exposure.

##### Ingestion:

Effects should be less severe than through exposure to higher concentrations of silver nitrate which may include symptoms of pain and burning in mouth, blackening of the skin and mucous membranes, throat and abdomen, diarrhea and shock. A poison in higher concentrations.

##### Skin Contact:

Effects are expected to be less severe than for exposure to higher concentrations where symptoms include redness, pain and severe burns.

##### Eye Contact:

Causes severe eye irritation, redness and pain. Contact may cause eye damage.

##### Chronic Exposure:

Prolonged or repeated inhalation, application or ingestion of silver compounds may cause a permanent bluish discoloration of the skin, eyes, and mucous membranes.

##### Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance. Persons with heavy metals accumulation should cease contact with silver compounds.

### 4. First Aid Measures



**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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## 5. Fire Fighting Measures

**Fire:**

Not combustible, but concentrated material is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

**Explosion:**

Silver nitrate reactions may cause explosions.

**Fire Extinguishing Media:**

Use water only on small fires; do not use dry chemical or carbon dioxide. For large fires, flood the area with water.

**Special Information:**

Concentrated solutions are oxidizing materials and can increase the flammability of adjacent combustible materials. In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Protect from light. Protect from freezing. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

OSHA Permissible Exposure Limit (PEL):

0.01 mg/m<sup>3</sup> (TWA), silver, metal & soluble compounds, as Ag

**ACGIH Threshold Limit Value:**

0.01 mg/m<sup>3</sup> (TWA), soluble silver compounds, as Ag

0.1 mg/m<sup>3</sup> (TWA), silver metal

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half-face high efficiency particulate respirator (NIOSH type N100 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece high efficiency particulate respirator (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

**Appearance:**

Clear, colorless solution.

**Odor:**

Odorless.

**Solubility:**

Miscible in water.

**Density:**

1.00

**pH:**

No information found.

% Volatiles by volume @ 21C (70F):

ca. 98

**Boiling Point:**

No information found.



**Melting Point:**

No information found.

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable at room temperature in sealed containers. Light sensitive.

**Hazardous Decomposition Products:**

Oxides of nitrogen and toxic metal fumes may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Reducing agents, ammonia, alkalis, antimony salts, arsenites, bromides, carbonates, chlorides, iodides, thiocyanates, ferrous salts, phosphates, tannic acid and tartrates. Concentrated material is a strong oxidizing agent and can cause a fire when contacted with combustible materials.

**Conditions to Avoid:**

Light, heat, incompatibles.

## 11. Toxicological Information

Silver nitrate: Oral rat LD50: 1173 mg/kg; Irritation, rabbit, eye, Std Draize: 1 mg, severe. Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	--NTP Carcinogen--		IARC Category
	Known	Anticipated	
Silver Nitrate (7761-88-8)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Silver Nitrate (7761-88-8)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes
-----\Chemical Inventory Status - Part 2\-----				
Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Silver Nitrate (7761-88-8)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes
-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Silver Nitrate (7761-88-8)	No	No	No	Sliver cmpd/
Water (7732-18-5)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient	-RCRA-		-TSCA-	
	CERCLA	261.33	8 (d)	
Silver Nitrate (7761-88-8)	1	No	No	



Water (7732-18-5)

No

No

No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No  
Reactivity: No (Mixture / Liquid)

**Australian Hazchem Code:** 2X**Poison Schedule:** None allocated.**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 2 Flammability: 0 Reactivity: 0**Label Hazard Warning:**

WARNING! CAUSES SEVERE EYE IRRITATION. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT. AFFECTS EYES, SKIN AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Avoid breathing vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 9.

**Disclaimer:**

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