

**SAFETY DATA SHEET**

Product Identity:

**ARZOL SILVER NITRATE APPLICATORS****Section 1: Identification****PRODUCT:** ARZOL SILVER NITRATE APPLICATORS**GENERAL USE:** Cauterization of wounds and ulcers**MANUFACTURER:****ARZOL CHEMICAL COMPANY**  
12 NORWAY AVENUE #2  
KEENE, NH 03431  
603-352-5242 · FAX 603-352-1528**EMERGENCY PHONE:** 603-352-5242  
(Normal business hours)**INFORMATION PHONE:** 603-352-5242  
(Normal business hours)**CHEMTREC:** 800-424-9300 (D.C. 202-483-7616)**Section 2: Hazards Identification****GENERAL HAZARD STATEMENT:** Arzol® Silver Nitrate Applicators are a pharmaceutical product that is in solid, final form for direct administration to the patient, and as such, they are not covered under OSHA Hazard Communication

Standard. However, some elements contained in these products have been determined to be toxic and are subject to regulatory controls.

**HAZARD CLASSIFICATION:** Oxidizer, Irritant**EMERGENCY OVERVIEW:** Silver nitrate/potassium nitrate solid impregnated on tip of wooden applicator is a strong irritant to skin and tissue. Toxic if ingested.**PRIMARY ROUTE OF ENTRY: (for product):** Skin**Acute Effects of Overexposure:**

Note: Since the product has not been tested as a whole, the health effects below are based on the health effects of individual ingredients which are in significant concentrations in product. When appropriate, health effects of the individual ingredients are given in order to provide adequate warning to persons using the silver nitrate applicators. Silver nitrate applicators, in their final form for use, are not believed to pose high risk to the user, due to the small amount of active ingredients on the tip of the applicator, and the highly remote likelihood of inadvertent or accidental exposures to toxic concentrations.

**INHALATION:**

- Inhalation of airborne silver nitrate particles may cause irritation of the respiratory tract and mucous membranes.

**EYE:**

- Contact with silver nitrate/potassium nitrate solid impregnated on tip of wooden applicator may cause irritation, the degree of which depends on the concentration and period of contact. Symptoms may include burning, tearing, and redness.

**SKIN:**

- Contact with silver nitrate/potassium nitrate solid impregnated on tip of wooden applicator may cause irritation, the degree of which depends on the concentration and period of contact. Symptoms may include redness and burning.

**INGESTION:**

- Poisonous. If swallowed, can cause severe gastroenteritis and can be fatal. Due to its corrosive property, large doses of ingested silver nitrate may cause a burning sensation in the throat, violent abdominal pain, vomiting, collapse, and death.

**Chronic Effects of Overexposure:**

- It is reported in the literature that chronic introduction of significant amounts of silver compounds into the blood stream and subsequent deposition of the reduced silver in various tissues of the body may result in the production of a generalized permanent grayish pigmentation of the skin and mucous membranes – a condition known as argyria with no constitutional symptoms and no physical disability.
- The introduction of fine particles of silver through breaks in the skin produces a local pigmentation at the site of the injury. Localized argyria of the skin is rare. It has been concluded that on the average, 3.8 grams of orally administered silver nitrate causes argyria.
- The inhalation of silver powder over long periods has been concluded to cause pulmonary changes.
- Chronic exposure to potassium nitrate can cause:
  - anemia
  - nephritis
  - methemoglobinemia

**CARCINOGENICITY:**

- No component within this solid product is associated with carcinogenicity by NTP and IARC.
- No component within this solid product is regulated by OSHA within 29 CFR 1910 Subpart Z as a carcinogen.

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE (to silver nitrate):** Preexisting diseases of the lung, skin, eyes, and other mucous membranes.

---

### Section 3: Composition/Information on Ingredients

INGREDIENT	CAS NUMBER	PERCENTAGE BY WEIGHT	OSHA PEL <sup>1</sup>	ACGIH TLV
Silver nitrate	7761-88-8	75	0.01mg/m <sup>3</sup> , as Ag metal and soluble compounds	0.1 mg/m <sup>3</sup> , as Ag metal  0.01mg/m <sup>3</sup> as Ag soluble compounds
Potassium nitrate	7757-79-1	25	N/A	<u>N/A</u>

Note: The chemicals above are hardened and impregnated into the tip of a wooden applicator. The weight percentages indicated above represent the relative proportions of the active ingredients and do not take into account the weight of the applicator.

**Synonyms:** Lunar caustic

### Section 4: First-Aid Measures

**INHALATION:** This is not a probable route of exposure due to the product form. If acute overexposure to product occurs, immediately remove victim from the adverse environment to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Seek medical attention immediately.

**EYE:** Wash out eye with lukewarm water for at least fifteen (15) minutes. Seek prompt medical attention.

**SKIN:** Wash skin area thoroughly with soap and water. Remove contaminated clothing. Seek medical attention.

**INGESTION:** Give one (1) glass of milk or water. Seek immediate medical attention. Never give anything by mouth to an unconscious person.

### Section 5: Fire-Fighting Measures

**FLASH POINT (Method Used):** N/A

**FLAMMABLE LIMITS:** N/A

**AUTO IGNITION TEMPERATURE:** N/A

**GENERAL HAZARD:** The impregnated solid is an oxidizer. May release toxic or irritating vapors under fire conditions.

**EXTINGUISHING METHOD:** As appropriate for surrounding fire. It is not believed that the product would be a significant hindrance to extinguishing methods used for the surrounding fire, due to the small amount of impregnated chemical solid and product form.

**FIRE FIGHTING EQUIPMENT:** Fire fighters and others who may be exposed to combustion products during fire should wear full protective clothing, including self-contained breathing apparatus (SCBA). Wear SCBA with a full face-piece, operated in the positive pressure mode when fighting fires.

**HAZARDOUS COMBUSTION PRODUCTS:** Acrid/irritating smoke, oxides of nitrogen, potassium oxide, and oxides of carbon.

#### Section 6: Accidental Release Measures

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Not applicable for product in final form (solid silver nitrate/potassium nitrate impregnated on tip of wooden applicator). Dispose of spent applicators in accordance with applicable federal, state, and local regulations.

#### Section 7: Handling and Storage

**HANDLING:** Store product in a dark, dry location, away from organic or other readily oxidizable materials. Keep container closed when not in use. Do not use in eyes. Keep away from children.

**STORAGE:** Ambient temperature and pressure are adequate.

#### Section 8: Exposure Controls/Personal Protection

**ENGINEERING CONTROLS:** Local and/or general ventilation, as needed, to reduce employee exposure to below applicable OSHA PELs and ACGIH TLVs (see SECTION 2.0, COMPOSITION INFORMATION ON INGREDIENTS, for PELs and TLVs). Due to final product use, it is not believed that PELs or TLVs will be exceeded.

**RESPIRATORY:** Use an appropriate NIOSH-approved respirator if airborne contaminant concentrations exceed applicable OSHA PEL or ACGIH TLV (see SECTION 2.0 COMPOSITION INFORMATION ON INGREDIENTS, FOR PELs and TLVs), or other industry standards or guidelines on exposure. If respiratory protection is required, all appropriate requirements as set forth in 29 CFR 1910.134 must be met. A competent health professional should be consulted for respirator selection. Due to final product form and use, it is not believed that PELs or TLVs will be exceeded.

**Gloves:** Latex, vinyl or rubber examination gloves in order to prevent unnecessary or accidental skin contact.

**EYES:** Safety glasses to prevent accidental contact.

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:** No special clothing necessary

## Section 9: Physical and Chemical Properties

**Boiling Point:** Decomposes, for silver nitrate

**Vapor Pressure (mm Hg, @ 68°F):** N/A

**Vapor Density (AIR=1):** N/A

**Melting Point:** 414°F (212°C), for silver nitrate

**Freezing Point:** N/A

**Appearance, Odor and Physical State:**

White, grey, or black odorless solid impregnated on tip of wooden applicator

**Specific Gravity (H<sup>2</sup>O=1):** >1, for silver nitrate

**Evaporation Rate:** N/A

**Solubility in water:** Soluble, for silver nitrate

**pH:** N/A

**Coeff. Water/oil Dist.:** N/A

**Odor Threshold:** N/A

**Viscosity:** N/A

**Evaporation Rate:** N/A

## Section 10: Stability and Reactivity

**STABILITY:** Product is stable at ambient temperature and pressure under normal conditions of use and transportation. Exposure of product to light may cause oxidation and discoloration of the impregnated applicator.

**CONDITIONS TO AVOID:** Contact of product with easily oxidizable materials and other incompatible materials. Heat or high temperature may cause solid in tip of product to decompose, possibly releasing small amounts of toxic or irritating vapors.

**INCOMPATIBLE MATERIALS:** Easily oxidizable materials.

Silver nitrate is incompatible with alkalis, antimony salts, arsenites, bromides, carbonates, chlorides, iodides, thiocyanates, ferrous salts, hypophosphites, morphine salts, oils, creosol, phosphates, tannic acid, tartrates, vegetable decoctions and extracts; acetylene, acetylene+ammonium hydroxide, acetylides, ammonium hydroxide, arsenic, chlorine trifluoride, chlorosulfuric acid, ethanol, (magnesium powder+water), phosphorous, sulfur, charcoal, cuprous acetylide, magnesium, phosphine, phosphonium iodide, phosphorous isocyanate, and plastics.

Potassium nitrate is incompatible with antimony, antimony trisulfide, arsenic, arsenic disulfide, barium sulfide, boron, boron phosphide, calcium sulfide, charcoal, copper phosphide, fluorine, germanium, germanium sulfide, sodium acetate, sodium hypophosphite, sodium peroxide+dextrose, sulfur+arsenic trisulfide, titanium, titanium disulfide, trichloroethylene, zinc, zirconium.

**HAZARDOUS DECOMPOSITION PRODUCTS:** When heated to decomposition, will emit small amounts of toxic NO<sub>x</sub> fumes and potassium oxide.

**REACTIVITY/HAZARDOUS POLYMERIZATION:** Will Not Occur

## Section 11: Toxicological Information

Inhalation is not possible in final product form (hardened silver nitrate).

Ingestion, skin exposure and eye exposure are all possible.

Skin exposure will result in staining of the skin that will persist for up to one week. Prolonged exposure to delicate skin, such as that of mucous membranes or neonatal skin, may result in chemical burns.

Eye exposure carries the most serious potential for permanent damage as silver nitrate can cause permanent corneal

staining. **Do not use product on the eyes.**

Ingestion: The LD50 of the final product form (75% silver nitrate / 25% potassium nitrate) is unknown. The LD50 for the individual components is as follows:

For silver nitrate:

LD50 oral mouse – 50 mg/kg  
LDLo unknown route, man - 29 mg/kg  
Eye rabbit – 1 mg, severe irritation

For potassium nitrate:

LD50 oral rabbit – 3015 mg/kg

Neither silver nitrate nor potassium nitrate are listed as carcinogens by the National Toxicology Program Report on Carcinogens, the International Agency for Research on Cancer Monographs, or by OSHA.

## Section 12: Ecological Information

N/A for solid product in its as shipped form. NIF on specific product to establish its effect if released into the environment in finely divided form. Particulate discharged to a POTW may pass-through or contaminate sewage sludge, may interfere with the treatment systems process, and may be non-compliant with a POTW permit or other regulations.

## Section 13: Disposal Considerations

**WASTE DISPOSAL METHOD:** Dispose of in accordance with applicable federal, state, and local regulations. Consult an expert on the disposal of spent or recovered material. A solid waste determination should be performed by a qualified professional. The recommended method of disposal is incineration.

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed

RCRA U-Series: None listed

## Section 14: Transport Information

DOT hazard classification: Oxidizer.

In quantities of less than 600 grams total, Arzol® Silver Nitrate Applicators are classed as a Consumer Commodity by the DOT and may be transported via **ground shipment only**. Each Arzol® applicator stick contains between 0.08 – 0.1 grams of product.

## Section 15: Regulatory Information

---

Selected U.S. Federal and State Regulations (not all-inclusive):

**EPA SARA Title III Hazard Categorization:** Based on the components of the tip of the silver nitrate applicators, the product is categorized as an immediate (acute) health hazard and delayed (chronic) health hazard.

**EPA SARA Title III Section 302 Extremely Hazardous Substance (EHSs):** No ingredients in this product are listed as an EHS under Section 302 of SARA Title III.

**EPA SARA Title III Section 313 Reportable Substances:** Silver nitrate (silver compounds) is subject to reporting requirements.

<b>Section 16: Other Information</b>
--------------------------------------

**NFPA RATING** (for solid formed product): Health: 1 Flammability: 1 Reactivity: 0 Special: OX (oxidizer)

**ABBREVIATIONS/ACRONYMS:**

**ACGIH** -American Conference of Governmental Industrial Hygienists  
**CAS** -Chemical Abstracts Service  
**CFR** -Code of Federal Regulations  
**CPR** -Cardiopulmonary Resuscitation  
**EST** -Eastern Standard Time  
**HMIS** -Hazardous Materials Identification System  
**IARC** -International Agency for Research on Cancer  
**MSDS** -Material Safety Data Sheet  
**MSHA** -Mine Safety and Health Administration  
**NFPA** -National Fire Protection Agency  
**N/A** -Not Applicable  
**NIA** -No Information Available  
**NIF** -No Information Found

**NIOSH** -National Institute for Occupational Safety and Health  
**NTP** -National Toxicology Program  
**OSHA** -Occupational Safety and Health Administration  
**PEL** -Permissible Exposure Limit  
**PNOR** -Particulate Not Otherwise Regulated  
**PNOC** -Particulate Not Otherwise Classified  
**POTW** -Publicly Owned Treatment Works  
**PPE** -Personal Protective Equipment  
**SCBA** -Self-contained Breathing Apparatus  
**STEL** -Short-term Exposure Limit  
**TLV** -Threshold Limit Value  
**TWA** -Time-weighted Average

**DISCLAIMER:** All information, recommendations, and suggestions appearing herein concerning the product are based upon data believed to be reliable. It is the user's responsibility to determine the safety, toxicity, and suitability for their own use of the product described herein. Since the actual use by others is beyond our control, no guarantee, expressed or implied is made by Arzol Chemical Company as to the effects of such use, the results to be obtained, or the safety and toxicity of the product, nor does Arzol Chemical Company assume any liability arising out of use by others of the product referred to herein. Arzol Chemical Company shall not in any event be liable for special, incidental or consequential damages in connection with this SDS. This SDS is not intended as a license to operate under, or recommendation to infringe on, any patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.

This information is not intended to serve as a complete regulatory compliance document. This information is offered as a guide to the SDS user. No guarantees can be made whether the user will be in complete or correct compliance with all applicable regulations when this SDS is used. It is the user's responsibility to comply with all federal, state, and local regulations.

PREPARED BY: Dr. Heather M Hollister  
Vice President of Regulatory Affairs  
Arzol Chemical Company  
12 Norway Ave. #2  
Keene, NH 03431  
(603) 352-5242

REVISION NO: 4

DATE: 5/4/2015

MSDS CONTACT: Same as above

SUPERSEDES MSDS DATED: February 23, 2006