Pioneer Forensics LLC
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Silver Nitrate Crystal MSDS

Effective Date: July 11, 2013
24 Hour Emergency Contact:
ChemTel: (800)255-3924
www.pioneerforensics.com

1. PRODUCT AND COMPANY IDENTIFICATION

Product:	**Silver Nitrate**
Product Code(s):	PF046; PF047
CAS#:	7761-88-8
Synonyms:	Lunar caustic; silver nitrate toughened; Nitric Acid, Silver (I) Salt
Manufacturer:	Pioneer Forensics, LLC 804 E. Eisenhauer Blvd. Loveland, CO 80537 Ph: (970) 292-8487
Emergency Number:	(800) 255-3924 (CHEM-TEL)
Customer Service:	(970) 292-8487

2. HAZARDS IDENTIFICATION

Emergency Overview: DANGER! STRONG OXIDIZER! CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE. CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL OR MAY BE FATAL IF SWALLOWED OR INHALED.

Safety Ratings:	Health: 3, Severe	Reactivity: 3, Severe
	Flammability: 0, None	Contact: 3, Severe

OSHA Regulatory Status: This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Acute Health Effects:

Routes of Exposure: Inhalation, ingestion, skin contact, eye contact

Inhalation: Corrosive. May cause damage to mucus membranes and respiratory tract.

Ingestion: Corrosive. Harmful if swallowed. May cause burns to the lips, oral cavity, esophagus, and/or digestive tract.

Skin Contact: Corrosive. Causes severe skin burns. May discolor skin.

Eye Contact: Corrosive. Causes severe eye burns. May cause permanent eye damage.

Target Organs: Skin, eyes, respiratory tract, blood, liver, kidneys

Chronic Health Effects: Corrosive. Prolonged contact causes serious tissue damage. May cause liver and/or kidney damage. Risk of damage to blood system.

Aggravation of:
Medical Conditions: Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

Potential Environmental Effects: Very toxic to aquatic organisms. May cause long term adverse effects in the aquatic environment.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS#	Chemical Formula	Formula Weight	Hazardous	% by Weight
Silver Nitrate	7761-88-8	$AgNO_3$	169.87	Yes	>99

4. FIRST AID MEASURES

First Aid Procedures:

Inhalation: Remove to fresh air. If breathing is difficult, administer oxygen. If the victim is not breathing, give artificial respiration. Get medical attention if symptoms occur.

Ingestion: Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Never give anything by mouth to an unconscious person. GET MEDICAL ATTENTION OR CALL POISON CONTROL CENTER IMMEDIATELY.

Skin Contact: In case of contact, wash skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if symptoms persist.

Eye Contact: Check for and remove contact lenses. Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention.

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.

Notes to Physician: Treat symptomatically.

5. FIRE FIGHTING MEASURES

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 0 Special: Oxidizer

Flammable Properties: Non-flammable, but material is a STRONG OXIDIZER. May explode from heat or contamination. Contact with combustible materials, reducing agents, or organic materials 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.

Flash Point: Not applicable

Auto-ignition Temp: Not applicable

Flammable Limits in Air (% by volume): Not applicable

Suitable Extinguishing Media: Water spray, fog.

Unsuitable Extinguishing Media: Dry chemical, carbon dioxide, halon.

Hazardous Combustion Products: Nitrogen oxides. May decompose upon heating to product corrosive and/or toxic fumes.

Specific Hazards: Contact with combustible, organic, or oxidizable substances may cause extremely violent explosion. When heated to decomposition it emits toxic fumes. Runoff may create a fire or explosion hazard.

Special Protective Equipment For Firefighters: As in any fire, wear MSHA/NIOSH approved (or equivalent) self-contained breathing apparatus with full face piece operated in the pressure-demand or other positive pressure mode and full protective gear.

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: Ventilate area of leak or spill. Eliminate all sources of ignition. Isolate hazard area and keep unnecessary and unprotected personnel away from the area of the leak or spill. Keep upwind. Keep out of low areas. Wear appropriate personal protective equipment as specified in the Exposure Control and Personal Protection Section 8. Avoid contact with eyes, skin, and clothing. Avoid inhalation of dusts. Wear a dust mask if dust is generated above exposure limits.

Environmental Precautions: Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground. In case of large spill, dike if needed.

Methods for Containment: Stop leak if you can do so without risk. Keep combustibles (wood, paper, oil, etc.) away from spilled material. If sweeping of a contaminated area is necessary, use a dust suppressant agent which does not react with the product. Prevent entry into waterways, sewer, basements or confined areas. Dike the spilled material if necessary.

Methods for Cleaning Up: Keep combustibles away from spilled material. Pick up and place in a suitable non-combustible container for reclamation or disposal, using a method that does not generate dust. Clean contaminated surface thoroughly. Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations.

7. HANDLING AND STORAGE

Handling: Wear personal protective equipment (see section 8). Use only in well-ventilated areas. Provide sufficient air exchange and/or exhaust in work rooms. Wear appropriate respiratory equipment in case of insufficient ventilation. Protect from direct sunlight. Avoid contact with skin, eyes and clothing. Do not breathe dust. Keep formation of airborne dusts to a minimum. Do not ingest. Do not eat, drink, or smoke while handling this product. Do not handle near an open flame, heat, or other sources of ignition. Keep away from incompatible materials such as combustibles, reducing agents, organic materials, metals, acids, moisture. Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquids). Observe all warnings and precautions listed for the product.

Storage: Store in a cool, dry, ventilated area away from flame, sources of ignition, heat, and incompatible materials. Do not store near combustibles, organic materials, or other oxidizable materials. Keep containers tightly closed and upright. Protect form physical damage. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Limits: ACGIH (TWA): 0.01 mg/m^3

OSHA (PEL): 0.01 mg/m^3

Engineering Controls: Ensure adequate ventilation. 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 or to acceptable levels.

Personal Protective Equipment:

Eye Protection: Wear safety glasses with side shields or goggles.

Skin Protection: Wear appropriate chemical resistant clothing (with long sleeves) and appropriate chemical resistant gloves.

Respiratory Protection: A NIOSH- approved dust respirator may be necessary under certain circumstances where airborne concentrations are at unacceptable levels. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

General Hygiene Considerations: Avoid contact with skin, eyes, clothing, and combustible materials. Remove and wash contaminated clothing promptly. Do not breathe dust. When using, do not eat, drink or smoke. 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. Provide eyewash station and safety shower.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Appearance:	Crystalline powder
Color:	Colorless to white
Odor:	Odorless
Molecular Formula:	$AgNO_3$
Molecular Weight:	169.87
pH:	6-7 (Aqueous solution)
Specific Gravity:	4.35
Freezing/Melting Point:	212°C (414°F)
Boiling Point:	440°C (824°F) (Decomposes)
Flash Point:	Not applicable
Auto Ignition Temperature:	Not applicable
Flammable Limits in Air (% by Volume):	Not applicable
Solubility:	Freely soluble in water
Vapor Pressure:	Not applicable
Vapor Density:	5.8 (Air=1)
Percent Volatile:	No information found
Odor threshold (ppm):	No information found

Evaporation Rate:	No information found
Partition Coefficient (n-octanol/water):	No information found

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	Incompatibles, combustibles, heat, light.
Incompatible Materials:	Combustible materials, reducing agents (oxidizable substances), organic materials, alkalis, sulfur.
Hazardous Decomposition Products:	Nitrogen oxides. May decompose upon heating to produce corrosive and/or toxic fumes.
Possibility of Hazardous Reactions:	May react violently with the incompatible materials listed above.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:	Oral Rat LD50: 1173 mg/kg
Acute Effects:	Harmful if swallowed, inhaled, or absorbed through skin.
Local Effects:	Causes burns to any area of contact.
Sensitization:	Not a skin sensitizer.
Chronic Effects:	Corrosive. Prolonged contact causes serious tissue damage. May cause damage to the blood, lungs, liver and/or kidneys.
Carcinogenic Effects:	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:	May affect genetic material.
Neurological Effects:	No information found
Reproductive Effects:	May cause adverse reproductive effects.
Teratogenic Effects:	No information found
Target Organs and Symptoms:	Skin, Eyes, Mucus Membranes, Blood, Lungs, Liver, Kidneys. Corrosive effects.

12. ECOLOGICAL INFORMATION

Ecotoxicological Data:	EC50 Water flea (Daphnia magna):	0.0008 mg/L 48 H
	LC50 Fathead minnow (Pimephales promelas):	0 - 0.0072 mg/L 96 H
Ecotoxicity:	Very toxic to aquatic life with long lasting effects.	

Environmental Effects: Toxic to the environment.

Persistence and Degradability: The product is not readily biodegradable.

Partition Coefficient (n-octanol/water): No information found

13. DISPOSAL INFORMATION

Disposal Instructions: Dispose of this material and its container to hazardous or special waste collection point. 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.

Waste Codes: No information found

14. TRANSPORT INFORMATION

DOT:

UN Number: UN1493

Proper Shipping Name: Silver Nitrate

Hazard Class: 5.1

Packaging Group: II

15. REGULATORY INFORMATION

U.S. Federal Regulations:

OSHA: This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Inventory: Silver Nitrate

U.S. EPCRA (SARA Title III):

Sections 311/312:

Hazard Categories	List (Yes/No)
Section 311 – Hazardous Chemical	Yes
Immediate Hazard	Yes
Delayed Hazard	Yes
Fire Hazard	Yes
Pressure Hazard	No
Reactivity Hazard	No

Section 313: Toxic Chemical or Category: Silver Nitrate

CERCLA Reportable Quantities: 1 lb

International Inventories:

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

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

16. OTHER INFORMATION

Product Use: For manufacturing, industrial and laboratory use only; not for household use.

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Issue Date: 07/11/2013

Reason for Revision: Not applicable