Rocky Mountain Reagents
SCIENTIFIC SOLUTIONS SINCE 1951

SDS

Safety Data Sheet

1. IDENTIFICATION

Product Identifier: **Silver Nitrate Solution, 3-15% w/w (0.2-1N)**

Product Code(s): S1011, S1046, S1078, S1079, S1130, S1224

Synonyms: Lunar Caustic Solution

Recommended Use: For manufacturing, industrial, and laboratory use only. For use as a catalyst, laboratory reagent, or oxidizing agent.

Uses Advised Against: Not for food, drug, or household use.

Supplier: Rocky Mountain Reagents, Inc.
4621 Technology Drive, Golden, CO 80403
Phone: (303) 762-0800 Fax: (303) 762-1240

Emergency Phone Number: For health emergency call Poison Control: (800) 222-1222.

2. HAZARDS IDENTIFICATION

Hazard Classifications: Skin Corrosion/Irritation: Category 1A
Eye Damage/Irritation: Category 1

Signal Word: DANGER

Hazard Statements: Causes severe skin burns and serious eye damage.

Pictograms:



Precautionary Statements:

Prevention: Do not breathe fumes, mists, vapors, or spray.
Wash thoroughly after handling.
Wear protective gloves, protective clothing, eye protection, and face protection.

Response: Immediately call a poison center or doctor.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
Wash contaminated clothing before reuse.

If inhaled: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage: Store locked up.

Disposal: Dispose of contents and container in accordance with local, regional, national, and international regulations.

Hazards Not Otherwise Classified: This product is toxic to aquatic life. Avoid release to the environment.
This product is composed of oxidizing ingredients and may cause or accelerate fire hazards.

Toxicity Statement: Not applicable.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Component	Common Name / Synonyms	CAS#	Chemical Formula	% by Weight
Water	Water	7732-18-5	H_2O	85 – 97
Silver Nitrate	Lunar Caustic	7761-88-8	$AgNO_3$	3.0 – 15

Trade Secret Statement: Not applicable.

4. FIRST AID MEASURES

First Aid Procedures:

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician or poison control center immediately.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, keep head low so that vomit does not enter lungs. Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Skin Contact: Wash skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician or poison control center immediately.

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. Call a physician or poison control center immediately.

General Advice: Poison information centers in each state can provide additional assistance for scheduled poisons. Ensure that medical personnel and those providing first aid are aware of the material(s) involved and take precautions to protect themselves.

Symptoms and Effects: Corrosive. May cause irritation, burns, headache, nausea, vomiting, difficulty breathing, hypermotility, darkening of skin or tissues (argyria), vomiting, diarrhea, cyanosis. May cause respiratory and cardiovascular effects. Prolonged or repeated exposure may cause lung damage, liver effects, and kidney effects.

Immediate Medical Care/ Special Treatment: Treat symptomatically. Symptoms may be delayed. Call a physician or poison control center immediately.

5. FIREFIGHTING MEASURES

Suitable Extinguishing Media: Water spray, dry powder, alcohol resistant foam, carbon dioxide.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream, as it may scatter and spread fire.

Hazardous Combustion Products: Nitrogen oxides, silver oxides.

Specific Hazards: Oxidizer. Contact with combustible and organic material may cause fire. This product will accelerate burning when involved in a fire. May cause explosion hazard if contacted with flammable materials or if heated. May decompose upon heating to produce corrosive and/or toxic fumes.

Special Protective Equipment/ Precautions for Firefighters: As in any fire, wear MSHA/NIOSH-approved (or equivalent), self-contained, positive-pressure or pressure-demand breathing apparatus and full protective gear. Use water spray to cool unopened containers. Move containers from fire area, if you can do so without risk. In the event of fire and/or explosion, do not breathe fumes.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Protective Equipment: Isolate hazard area and keep unnecessary and unprotected personnel away from the area of the leak or spill. Wear appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin, clothing, and combustible materials.

Emergency Procedures: In case of chemical emergency, or if unsure how to address an accidental release, consult a professional (see Section 1).

Methods for Containment: Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements, or confined areas. Dike the spilled material, where this is possible. Keep combustibles away from spilled materials. Product should not be released to the environment.

Methods for Cleanup: Keep combustibles away from spilled material. Absorb spill with an inert material (e.g. vermiculite, dry sand, earth, cloth, or fleece) and place in a non-combustible container for reclamation or disposal. Do not flush to sewer. Clean contaminated surfaces thoroughly. Never return spills in original containers for reuse. Clean up in accordance with all applicable regulations.

7. HANDLING AND STORAGE

Handling: Wear personal protective equipment (see Section 8). Avoid contact with skin, eyes, clothing, and combustible materials. Do not ingest. When using, do not eat, drink, or smoke. Keep away from incompatible materials (see Section 10). Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Containers of this material may be hazardous when empty, as they retain product residues. Observe all warnings and precautions listed for this product.

Storage: Store in a cool, dry, ventilated area. Keep out of light. Keep away from heat and sources of ignition. Do not store near combustible materials. Store in a segregated and approved area away from incompatible materials (see Section 10). Store in original container. Keep containers tightly closed and upright. Keep away from food, drink, and animal foodstuffs. Keep out of the reach of children. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of this product.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: Water: No information found.

Silver Nitrate:	ACGIH (TLV):	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. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Measures:

Eye/Face Protection: Wear safety glasses with side shields or goggles and a face shield. Maintain approved eye wash station and accessible rinse facilities in work area.

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

Respiratory Protection: An air-purifying, NIOSH-approved respirator with appropriate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure, air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are unknown, or if any other circumstances exist where air-purifying respirators may not provide adequate protection.

Specific Requirements for Personal Protective Equipment: Ensure that glove material is compatible with this product. This information is available from glove manufacturers.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless liquid.
Odor:	Odorless.
Odor Threshold:	No information found.
Formula Weight:	169.87 as $AgNO_3$
pH:	5.4 – 6.4 (10% w/v solution at 25 °C)
Melting/Freezing Point:	No information found.
Boiling Point/Range:	No information found.
Decomposition Temperature:	< 444 °C
Flash Point:	Not applicable.
Auto-ignition Temperature:	Not applicable.
Flammability:	Not applicable.
Flammability/Explosive Limits:	Not applicable.
Solubility:	Miscible with water.
Vapor Pressure:	No information found.
Vapor Density:	No information found.
Specific Gravity:	1.02 – 1.15 (Water = 1)
Evaporation Rate:	No information found.
Viscosity:	No information found.

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

10. STABILITY AND REACTIVITY

Reactivity Data:	Corrosive. See Section 11.
Chemical Stability:	Stable under normal conditions. Oxidizer; contact with combustible materials may cause fire. Sensitive to light.
Conditions to Avoid:	Heat, light, incompatible materials.
Incompatible Materials:	Reducing agents, combustible materials, organic materials, alkalis.
Hazardous Decomposition Products:	Nitrogen oxides, silver oxides.
Possibility of Hazardous Reactions:	May react vigorously, violently, or explosively if exposed to extreme thermal conditions or to the incompatible materials listed above. May decompose upon heating to produce corrosive and/or toxic fumes.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Exposure:	Inhalation, ingestion, skin contact, eye contact.	
Acute Effects:	Harmful if swallowed, inhaled, absorbed through the skin, or exposed to the eyes. May cause burns to the eyes, skin, respiratory tract, and gastrointestinal tract. May affect the respiratory system and cardiovascular system.	
Chronic Effects:	Prolonged or repeated exposure may cause skin and tissue discoloration, lung damage, liver effects, and kidney effects.	
Toxicological Data:	Water:	No information found.
	Silver Nitrate:	LD50 Oral, Rat: 1173 mg/kg Causes severe eye irritation based on animal data.
Symptoms of Exposure:	Irritation, burns, headache, nausea, vomiting, difficulty breathing, hypermotility, darkening of skin or tissues (argyria), vomiting, diarrhea, cyanosis.	
Carcinogenic Effects:	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	

12. ECOLOGICAL INFORMATION

Ecotoxicological Data:	Water:	No information found.	
	Silver Nitrate:	LC50, Rainbow Trout (Oncorhynchus mykiss):	0.006 mg/L 96 h
		EC50, Water Flea (Daphnia magna):	0.0006 mg/L 48 h
Persistence and Degradability:	Silver Nitrate:	Bioaccumulative Potential: 60 d, 70 µg/L Bioconcentration Factor: 120	

Environmental Effects: Toxic to aquatic life. Avoid exposure to the environment.

13. DISPOSAL INFORMATION

Disposal Instructions: All wastes must be handled in accordance with local, state, and federal regulations. Minimize exposure to product waste (see Section 8). Do not dispose unused waste down drains or into sewers.

Contaminated Packaging: Because 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: Not regulated.

Environmental Hazard Regulations: No information found.

Other Transport Precautions: Silver Nitrate: DOT Reportable Quantity: 1 lb

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: All components of this product are on the U.S. TSCA Inventory.

U.S. EPCRA (SARA Title III):

Section 302: No information found.

Sections 311/312:

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

Section 313: Silver Nitrate

CERCLA Reportable Quantities: Silver Nitrate: 1 lb

International Inventories:

Country or Region	Inventory Name	On Inventory (Yes/No)*
Australia	Australian Inventory of Chemical Substances (AICS)	N/A
Canada	Domestic Substances List (DSL)	N/A
Canada	Non-Domestic Substances List (NDSL)	N/A
China	Inventory of Existing Chemical Substances in China (IECSC)	N/A
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	N/A
Europe	European List of Notified Chemical Substances (ELINCS)	N/A
Japan	Inventory of Existing and New Chemical Substances (ENCS)	N/A
Korea	Existing Chemicals List (ECL)	N/A
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	N/A

*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

Disclaimer: Rocky Mountain Reagents, Inc. provides the information in this Safety Data Sheet in the belief that it is reliable but assumes no responsibility for its completeness or accuracy. The physical properties reported in this SDS are obtained from literature and do not constitute product specifications. Rocky Mountain Reagents, Inc. makes and gives no representations or warranties with respect to the information contained herein or the product to which it refers, whether express, implied, or statutory, including without limitation, warranties of accuracy, completeness, merchantability, non-infringement, performance, safety, suitability, stability, and fitness for a particular purpose. No warranty against infringement of any patent, copyright or trademark is made or implied. This SDS is intended only as a guide to the appropriate handling of the material by a properly trained person. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. Accordingly, Rocky Mountain Reagents, Inc. assumes no liability whatsoever for the use of or reliance upon this information including results obtained, incidental or consequential damages, or lost profits.

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