

## Safety Data Sheet

### 29 CFR 1910.1200

#### Section 1: Company and Product Identification

**Product Name:** Silver (I) Nitrate

**Product Code:** 9007

**Company:** Colonial Metals, Inc.  
 Building 20  
 505 Blue Ball Road  
 Elkton, MD 21921 United States  
 Company Contact: EHS Director  
 Telephone Number: 410-398-7200  
 FAX Number: 410-398-2918  
 E-Mail : info@colonialmetals.com  
 Web Site: www.colonialmetals.com



www.colonialmetals.com

**Emergency Response:** Supplier Emergency Contacts & Phone Number  
 Chemtrec: 800-424-9300  
 World Wide - Call COLLECT to U.S: 703-527-3887

#### Section 2: Hazards Identification

**Hazard Pictograms:**



**Signal Word:** Danger

**Hazard Category:** Acute tox, oral Cat 4  
 Skin corrosion/irritation Cat 1  
 Serious eye damage/eye irritation Cat 1  
 Specific target organ tox, single exp. Cat 3 (resp irrit)  
 Aspiration hazard Cat 2  
 Oxidizer Cat 2  
 Hazard to aquatic environment, acute Cat 3

**Hazard Statements:** H302: Harmful if swallowed  
 H314: Causes severe skin burns and eye damage  
 H318: Causes serious eye damage  
 H335: May cause respiratory irritation  
 H305: May be harmful if swallowed and enters airways  
 H272: May intensify fire; oxidizer  
 H402: Harmful to aquatic life

**Precautionary Statements:** P260: Do not breathe dust/fume/gas/mist/vapors/spray  
 P264: Wash thoroughly after handling  
 P270: Do not eat, drink or smoke when using this product  
 P271: Use only outdoors or in a well-ventilated area  
 P272: Contaminated work clothing should not be allowed out of the workplace  
 P280: Wear protective gloves/protective clothing/eye protection/face protection  
 P284: Wear respiratory protection

**Hazards not otherwise classified:**

**Chronic/Carcinogenicity Effects:**

Long term exposure to silver and silver salts can lead to the condition known as argyria-a general gray pigmentation of the skin and mucous membranes.

**Conditions Aggravated By Exposure:**

May cause argyria (a slate-gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate of silver). May be irritating to skin, eyes and respiratory tract.

**Conditions Aggravated By Overexposure:**

To the best of our knowledge, the chemical, the physical, and toxicological properties of this compound have not been thoroughly investigated.

**Reactivity Profile:**

SILVER NITRATE is noncombustible but, as an oxidizing agent, can accelerate the burning of combustible materials. If large quantities are involved in a fire or the combustible material is finely divided, an explosion may result. Prolonged exposure to fire or heat may result in an explosion. Toxic oxides of nitrogen are produced in fires [© AAR, 1999]. Light sensitive. Mixtures with alkyl esters may explode owing to the formation of alkyl nitrates. Mixtures with phosphorus, tin(II) chloride, or other reducing agents may react explosively [Bretherick 1979 p. 108-109]. Reacts with acetylene in the presence of ammonia to form silver acetyl ide, a powerful detonator when dry [Bretherick 1979 p. 198]. Reaction with ethyl alcohol (or other alcohols) may produce silver fulminate, which can explode when disturbed [Bretherick 1979 p. 200]. An intimate mixture of silver nitrate and magnesium may ignite spontaneously on contact with a drop of water [Bretherick 1979 p. 200]. An explosion occurred when purified phosphine was passed rapidly into a concentrated solution of silver nitrate [Mellor 3:471 1946-47]. When a mixture of 28% ammonium hydroxide and silver nitrate solution was treated with a small amount of sodium hydroxide. Black precipitate, silver nitride exploded on stirring [MCA Case History 1554 1968].

**Section 3: Composition / Information on Ingredients**

Hazardous substance (name)	Hazard Category	CAS#	Weight %
Silver Nitrate	Danger	7761-88-8	99.9
<b>Chemical Family:</b> Group 1B Metal Salts <b>Chemical Formula:</b> AgNO <sub>3</sub>	Oxidizer. Delayed target organ effects. Corrosive. Carcinogen		
<b>Synonyms:</b> Nitric Acid Silver (I) Salt, Silver (I) Nitrate			

**Section 4: First Aid Measures**

**General Info:** Consult a Physician. Show this safety data sheet to the doctor in attendance.

**Notable Exposure** Eye Hazards: Causes burns, irritating.

**symptoms:** Skin Hazards: May be harmful if absorbed through the skin, causes burns to the skin.

Ingestion Hazards: May be harmful if swallowed. Causes burns.

Inhalation Hazards: May be harmful if inhaled. May cause irritation to the respiratory tract. Material is extremely destructive to the tissue of the upper respiratory tract and mucous membranes.

Subchronic (Target Organ Effects): Eyes, nerves, blood, lungs.

**If ingested:** CYANIDES ARE EXTREMELY TOXIC AND FAST-ACTING POISONS. Even though the induction of vomiting is not usually recommended outside of a physician's care if the victim is conscious and not convulsing, it may be worth the risk if a cyanide has been ingested. Ipecac syrup or salt water may be used to induce vomiting in such an emergency. IMMEDIATELY call a hospital or poison control center and transport the victim to a hospital. If the victim is convulsing or unconscious, do not give anything by mouth, assure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital. (NTP, 1992)

**If inhaled:** IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. IMMEDIATELY call a physician and be prepared to transport the victim to a hospital even if no symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing. Remove the victim from the contaminated area while protecting yourself from exposure by wearing an appropriate respirator. Put a similar respirator on the victim if possible. Get medical attention immediately.

**Eye contact:** First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop

**Skin contact:** IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

## Section 5: Fire Fighting Measures

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**General Info:** Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Do not direct a solid stream of water or foam into burning molten material; this may cause spattering and spread the fire.

**Extinguishing Method / Equipment:** Flood with water. Cool all affected containers with flooding quantities of water. Apply water from as far a distance

**Hazardous:** Container explosion may occur under fire conditions.

**Decomposition Info:**

## Section 6: Accidental Release Measures

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**Personal precautions, protective equipment and procedures:** Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate respiratory protective equipment and clothing during clean-up. Avoid breathing dust. Ventilate area if easy to do so. Contact local authorities if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Containment Equipment and Procedures:** Large Spills: Contain actively spilling material if safe and easy to do so. Do not let product enter drains. Sweep up and placed in a proper vessel for recovery or disposal. Avoid raising dust. Ventilate and wash spill site after cleanup is complete..

Small Spills: Sweep or soak up and place in sealed container. Taking care to avoid dusting.

**Cleanup Procedures:** Keep sparks, flames, and other sources of ignition away. Keep material out of water sources and sewers. Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Cover solids with a plastic sheet to prevent dissolving in rain or fire fighting water. Water spill: If dissolved, apply sodium sulfide (Na<sub>2</sub>S) solution to precipitate heavy metals. Neutralize with agricultural lime (CaO), crushed limestone (CaCO<sub>3</sub>), or sodium bicarbonate (NaHCO<sub>3</sub>). Use mechanical dredges or lifts to remove immobilized masses of pollutants and precipitates. (AAR, 2003)

## Section 7: Handling and Storage

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**Safe Handling Precautions:** Do not handle until all safety precautions have been read and understood. Keep containers tightly closed. Ensure adequate ventilation. Avoid creating and breathing dust/vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment and wash thoroughly after handling. Keep away from ignition sources.

**Recommendations for Storage:** Store in cool, dry area in a tightly closed product container away from sources of ignition or flame. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

**Incompatibilities:** Light Sensitive

## Section 8: Exposure Control / Personal Protection

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**General / Engineering Controls:** Ventilation: Local Exhaust: Required in handling area

**Controls:** Mechanical: Desirable to insure concentration of material below TLV/TWA levels  
Other: Closed Ventilation system - Dust (Laboratory Fume Hood)

**Work Clothing:** Protective work clothing which covers skin and prevents exposures.

**Eye/face protection:** Wear safety glasses with side shields or goggles or face shield.

**Skin Protection:** Wear chemical resistant gloves.

**Respiratory Protection:** NIOSH approved chemical cartridge respirator for particulates and dust or self-contained breathing apparatus with full face shield.

**Additional Information:** Observe good chemical hygiene practices. Do not smoke or eat while using this product. Wash hands or exposed skin after using the product.

### Ingredient(s) - Exposure Limits:

Silver Nitrate

TWA - 0.01 mg/m<sup>3</sup> (Ag) - ACGIH ; TWA - 0.01 mg/m<sup>3</sup> (Ag) - OSHA PEL

**Section 9: Physical and Chemical Properties**

<b>State:</b> Solid	<b>Melting Point:</b> 414 °F 212 °C	<b>Freezing Point:</b> N/A
<b>Color:</b> Colorless crystals/White powder	<b>Boiling Point/Range:</b> 824 (decomposes) °F 440 (decomposes) °C	<b>pH:</b> 1-2
<b>Molecular Wt.:</b> 169.87	<b>Odor:</b> None	<b>Water Solubility:</b> Very Soluble
<b>Specific Gravity:</b> 4.35	<b>Flash Point:</b> N/A	<b>Part. Coeff (n-octanol/water):</b> N/A
<b>Upper Flam Limits:</b> N/A	<b>Lower Flam Limits:</b> N/A	<b>Vapor Density:</b> N/A
<b>VOC Content (lbs/gal):</b> N/A	<b>Viscosity:</b> N/A	<b>Autoignition Temp:</b> N/A

**Section 10: Stability and Reactivity**

**General:** This product is stable and non-reactive under normal conditions of use. Product is not subject to hazardous polymerization. Avoid open flame and ignition sources.

**Stability:** Stable

**Conditions to Avoid:** Exposure to light, and moisture

**Incompatible materials:** Strong reducing agents, alcohols, ammonia, magnesium, strong bases.

**Decomposition products:** Formed under fire conditions: silver/ silver oxides, nitrogen oxides (NOx).

**Section 11: Toxicological Information**

**General Information:** May cause argyria (a slate gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate or silver). Absorption into the body leads to formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2-4 hours longer.

**Toxicological Information:** Acute Studies

**Information (product):** LD50 Oral - rat - 1,173 mg/kg  
Remarks: Behavioral: Tetany. Cyanosis Diarrhea  
Irritation and Corrosion:  
Eyes - rabbit - severe eye irritation

**Likely Routes of Exposure:** Eye Contact  
Skin Contact  
Inhalation  
Ingestion - possible, but considered unlikely.

**Toxicological Information (contained substances)**

**Carcinogenicity or mutagenicity:** To the best of our knowledge the chemical, physical, and toxicological effects of this compound have not been thoroughly investigated.

**Sensitization:** Product is not expected to be a sensitizer.

**Other Notes:** None

**Section 12: Ecological Information**

**General information:** Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Aquatic toxicity:** Toxicity to fish:

mortality NOEC - Oncorhynchus mykiss (rainbow trout) - 0.108 mg/l - 96 h  
mortality LOEC - Oncorhynchus mykiss (rainbow trout) - > 0.007 mg/l - 7 d  
LC50 - Oncorhynchus mykiss (rainbow trout) - 0.006 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates:

EC50 - Daphnia magna (Water flea) - 0.0006 mg/l - 48 h

**Degradation / Mobility info:** Bioconcentration factor (BCF): 120

**Bioaccumulative potential:** Bioaccumulation: Lepomis macrochirus - 60 d

### Section 13: Disposal Information

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**Product disposal:** Place in a sealed container. Consult Federal EPA, State and local regulations for proper disposal/recycle/reclamation  
NOTE: Chemical additions, processing, or otherwise altering this material may make the waste management information presented above incomplete, inaccurate, or otherwise inappropriate.

**Container disposal:** Treat empty containers with extra care. Consult waste contractor.

**Other considerations:** RCRA Information

EPA HW NO. D001 D002 (Ignitable, corrosive waste)

### Section 14: Transport Information

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**DOT:** UN number: 1493 Class: 5.1 Packing group: II  
Proper shipping name: Silver Nitrate  
Marine pollutant: No  
Poison Inhalation Hazard: No

**IMO/IMDG:** UN number: 1493 Class: 5.1 Packing group: II EMS-No: F-A, S-Q  
Proper shipping name: SILVER NITRATE  
Marine pollutant: No

**IATA:** UN number: 1493 Class: 5.1 Packing group: II  
Proper shipping name: Silver nitrate

**Comments:** None

### Section 15: Regulatory Information

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**TSCA:** This product is TSCA listed.

**SARA:** SARA 302 Components:

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components:

The following components are subject to reporting levels established by SARA Title III, Section 313:

Silver nitrate CAS-No. 7761-88-8 Revision Date 1993-04-24

**SARA 311/312 Hazards:**

Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

**State Right To Know** Massachusetts Right To Know Components

**Components:** Silver nitrate CAS-No. 7761-88-8 Revision Date 1993-04-24

Pennsylvania Right To Know Components

Silver nitrate CAS-No. 7761-88-8 Revision Date 1993-04-24

New Jersey Right To Know Components

Silver nitrate CAS-No. 7761-88-8 Revision Date 1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

**Canadian DSL:** This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

**European Union (EU) Hazard Symbols:**

**Regulatory** XI

**Information:** Risk Phrases:

R 36/38 Irritating to eyes and skin.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 7/8 Keep container tightly closed and dry.

S 28A After contact with skin, wash immediately with plenty of water.

**Other International** None

**Regulations:**

## Section 16: Other Information

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**NFPA Rating**

Health: 3

Fire: 0

Reactivity: 2

Other: OX

**HMIS Rating**

Health: 3

Fire: 0

Reactivity: 2

Personal

Protection: J

**Precautionary Label:**

Inhalation Hazard

***Disclaimer:*** In compliance with the OSHA Hazard communication Standard, 29 C.F.R 1910.1200, we are providing you with a Materials Safety Data Sheet (MSDS) for the hazardous material you are purchasing.

*It is your responsibility to educate your employees on the safe use of the hazardous material. With this in mind, a copy should be forwarded to the supervisor of the user or to the user themselves, and copy should be retained in your files for future reference.*

*Colonial Metals, Inc. makes no presentation as to the accuracy of the information in the MSDS. The information is believed to be correct; however, you (the customer), should perform your own investigation and independent verification. If you resell the product, you are responsible to forward the information in the MSDS to your customer.*

*Colonial Metals, Inc.*

**SDS Author:** John Kerchner

**Version Date:** 7/30/2015