

**Silver Nitrate**

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**1. PRODUCT AND COMPANY IDENTIFICATION**

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**Product Name:** Silver Nitrate

**Synonyms/Generic Names:** Lunar caustic; Silver (1+) nitrate; Nitric acid, silver (1+) salt

**SDS Number:** 625.00

**Product Use:** For Educational Use Only

**Manufacturer:** Columbus Chemical Industries, Inc.  
N4335 Temkin Rd.  
Columbus, WI. 53925

**For More Information Contact:** Ward's Science  
5100 West Henrietta Rd.  
PO Box 92912-9012  
Rochester, NY 14692  
(800) 962-2660 (Monday-Friday 7:30-7:00 Eastern Time)

**In Case of Emergency Call:** CHEMTREC - 800-424-9300 or 703-527-3887 (24 Hours/Day, 7 Days/Week)

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**2. HAZARDS IDENTIFICATION**

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**OSHA Hazards:** Oxidizer, Carcinogen, Target organ effect, Harmful by ingestion, Corrosive

**Target Organs:** Eyes, Nerves, Blood, Lungs

**Signal Word:** Danger

**Pictograms:**



**GHS Classification:**

Oxidizing solids	Category 2
Acute toxicity, Oral	Category 4
Skin corrosion	Category 1B
Serious eye damage	Category 1
Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 4

**GHS Label Elements, including precautionary statements:****Hazard Statements:**

H272	May intensify fire; oxidizer.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H400	Very toxic to aquatic life.
H413	May cause long lasting harmful effects to aquatic life.

**Precautionary Statements:**

P220	Keep/Store away from clothing/ combustible materials.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/ physician.

**Potential Health Effects**

<b>Eyes</b>	Causes eye burns.
<b>Inhalation</b>	May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
<b>Skin</b>	Harmful if absorbed through skin. Causes skin burns.
<b>Ingestion</b>	Harmful if swallowed.

**NFPA Ratings**

<b>Health</b>	3
<b>Flammability</b>	0
<b>Reactivity</b>	0
<b>Specific hazard</b>	OX

**HMIS Ratings**

<b>Health</b>	3
<b>Fire</b>	0
<b>Reactivity</b>	0
<b>Personal</b>	J

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Component	Weight %	CAS #	EINECS# / ELINCS#	Formula	Molecular Weight
Silver Chloride	100	776188-8	231-853-9	AgNO <sub>3</sub>	169.87 g/mol

**4. FIRST-AID MEASURES**

<b>Eyes</b>	Immediately rinse with plenty of water for at least 15 minutes and seek medical attention immediately.
<b>Inhalation</b>	Move casualty to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention immediately.
<b>Skin</b>	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and wash using soap. Get medical attention immediately.
<b>Ingestion</b>	<b>Do Not Induce Vomiting!</b> Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention immediately.

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## 5. FIRE-FIGHTING MEASURES

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<b>Suitable (and unsuitable) extinguishing media</b>	Product is not flammable. Use appropriate media for adjacent fire. Cool unopened containers with water.
<b>Special protective equipment and precautions for firefighters</b>	Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.
<b>Specific hazards arising from the chemical</b>	Emits toxic fumes (nitrogen oxides, silver oxides) under fire conditions. Oxidizing solid. (See also Stability and Reactivity section).

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## 6. ACCIDENTAL RELEASE MEASURES

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<b>Personal precautions, protective equipment and emergency procedures</b>	See section 8 for recommendations on the use of personal protective equipment.
<b>Environmental precautions</b>	Prevent spillage from entering drains. Any release to the environment may be subject to federal/national or local reporting requirements.
<b>Methods and materials for containment and cleaning up</b>	Pick up and arrange disposal without creating dust. Sweep up and place in suitable, closed containers for disposal. Clean surfaces thoroughly with water to remove residual contamination. Dispose of all waste and cleanup materials in accordance with regulations.

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## 7. HANDLING AND STORAGE

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### Precautions for safe handling

See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use. Avoid formation of dusts.

### Conditions for safe storage, including any incompatibilities

Store in cool, dry well ventilated area. Light sensitive. Keep away from incompatible materials (see section 10 for incompatibilities).

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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### Occupational exposure controls:

Component	Exposure Limits	Basis	Entity
Silver Chloride	0.01 mg/m <sup>3</sup>	TLV	ACGIH
	0.01 mg/m <sup>3</sup>	PEL	OSHA
	0.01 mg/m <sup>3</sup>	REL	NIOSH

TWA: Time Weighted Average over 8 hours of work.

TLV: Threshold Limit Value over 8 hours of work.

REL: Recommended Exposure Limit

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit during x minutes.

IDLH: Immediately Dangerous to Life or Health

WEEL: Workplace Environmental Exposure Levels

CEIL: Ceiling

## Personal Protection

<b>Eyes</b>	Wear chemical safety glasses or goggles.
<b>Inhalation</b>	Provide local exhaust, preferably mechanical. If exposure levels are excessive, use an approved respirator.
<b>Skin</b>	Wear nitrile or rubber gloves, apron or lab coat.
<b>Other</b>	Not Available

## Other Recommendations

Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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Appearance (physical state, color, etc.)	Colorless to white crystalline solid.
Odor	Not Available
Odor threshold	Not Available
pH	6 - 7
Melting point/freezing point	212°C (413.6°F)
Initial boiling point and boiling range	440°C (824°F)
Flash point	Not Flammable
Evaporation rate	Not Available
Flammability (solid, gas)	Not Flammable
Upper/lower flammability or explosive limit	Not Explosive
Vapor pressure	Not Available
Vapor density	5.8 (Air = 1)
Density	4.35 (Water = 1)
Solubility (ies)	Easily soluble in cold water, hot water. Soluble in diethyl ether. Very slightly soluble in acetone. Solubility in water:
Partition coefficient: n-octanol/water	log Pow: 5
Auto-ignition temperature	Not Available
Decomposition temperature	440°C (824°F)

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## 10. STABILITY AND REACTIVITY

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<b>Chemical Stability</b>	Stable
<b>Possibility of Hazardous Reactions</b>	Will not occur.
<b>Conditions to Avoid</b>	Light.
<b>Incompatible Materials</b>	Strong reducing agents, alcohols, ammonia, magnesium, strong bases.
<b>Hazardous Decomposition Products</b>	Nitrogen oxides, silver/silver oxides.

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## 11. TOXICOLOGICAL INFORMATION

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### Acute Toxicity

<b>Skin</b>	Not Available
<b>Eyes</b>	Not Available
<b>Respiratory</b>	Not Available
<b>Ingestion</b>	LD50 Oral - rat - 1,173 mg/kg

## Carcinogenicity

<b>IARC</b>	No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
<b>ACGIH</b>	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
<b>NTP</b>	No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
<b>OSHA</b>	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

## Signs & Symptoms of Exposure

<b>Skin</b>	Irritation, redness, itchiness.
<b>Eyes</b>	Irritation, redness, watering eyes, itchiness, corneal opacification, bleeding conjunctiva, burns of conjunctiva, argyria, blindness.
<b>Respiratory</b>	Burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting.
<b>Ingestion</b>	burns, pain and burning in the mouth, violent abdominal pain, argyria -grayish/blackening of skin and mucous membranes, throat and abdomen, salivation, vomiting of black material, diarrhea, hypermotility, ulcerative gingivitis.

<b>Chronic Toxicity</b>	Not Available
<b>Teratogenicity</b>	Not Available
<b>Mutagenicity</b>	May affect genetic material.
<b>Embryotoxicity</b>	Not Available
<b>Specific Target Organ Toxicity</b>	May affect kidneys (lesions of kidneys, anuria) and lungs.
<b>Reproductive Toxicity</b>	May cause adverse reproductive effects.
<b>Respiratory/Skin Sensitization</b>	Not Available

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## 12. ECOLOGICAL INFORMATION

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### Ecotoxicity

<b>Aquatic Vertebrate</b>	mortality NOEC - Oncorhynchus mykiss (rainbow trout) - 0.108 mg/l - 96.0 h mortality LOEC - Oncorhynchus mykiss (rainbow trout) - > 0.007 mg/l - 7.0 d LC50 - Leuciscus idus (Golden orfe) - 0.029 mg/l - 96.0 h LC50 - Oncorhynchus mykiss (rainbow trout) - 0.006 mg/l - 96.0 h
<b>Aquatic Invertebrate</b>	EC50 - Daphnia magna (Water flea) - 0.0006 mg/l - 48 h
<b>Terrestrial</b>	Not Available

<b>Persistence and Degradability</b>	Not Available
<b>Bioaccumulative Potential</b>	Lepomis macrochirus - 60 d Bioconcentration factor (BCF): 120
<b>Mobility in Soil</b>	Not Available
<b>PBT and vPvB Assessment</b>	Not Available
<b>Other Adverse Effects</b>	Very toxic to aquatic life.

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## 13. DISPOSAL CONSIDERATIONS

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<b>Waste Residues</b>	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste products or residues.
<b>Product Containers</b>	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product container.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

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## 14. TRANSPORTATION INFORMATION

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US DOT	UN1493, Silver nitrate, 5.1, pg II
TDG	UN1493, Silver nitrate, 5.1, pg II
IMDG	UN1493, Silver nitrate, 5.1, pg II
Marine Pollutant	No
IATA/ICAO	UN1493, Silver nitrate, 5.1, pg II

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## 15. REGULATORY INFORMATION

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TSCA Inventory Status	All ingredients are listed on the TSCA inventory.
DSCL (EEC)	All ingredients are listed on the DSCL inventory.
California Proposition 65	Not Listed
SARA 302	Not Listed
SARA 304	Not Listed
SARA 311	Silver nitrate
SARA 312	Silver nitrate
SARA 313	Listed: Silver nitrate
WHMIS Canada	CLASS C: Oxidizing material. CLASS E: Corrosive solid.

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## 16. OTHER INFORMATION

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Revision	Date
Revision 1	02/04/2013

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