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| Infosafe No™ | 1CH63 | Issue Date : September 2016 | RE-ISSUED by CHEMSUPP |
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Product Name : **SILVER NITRATE**

Classified as hazardous

1. Identification

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| GHS Product Identifier | SILVER NITRATE | |
| Company Name | CHEM-SUPPLY PTY LTD (ABN 19 008 264 211) | |
| Address | 38 - 50 Bedford Street GILLMAN SA 5013 Australia | |
| Telephone/Fax Number | Tel: (08) 8440-2000 Fax: (08) 8440-2001 | |
| Recommended use of the chemical and restrictions on use | Photographic film, catalyst for ethylene oxide, indelible inks, silver plating, silvering mirrors, silver salts, germicide (as a wall spray), hair dyeing, analytical chemistry, antiseptic, purification of drinking water, fused form to cauterize wounds and laboratory reagent. | |
| Other Names | Name | Product Code |
| | SILVER NITRATE AR | SA087 |
| | SILVER NITRATE LR | SL087 |
| Other Information | EMERGENCY CONTACT NUMBER: +61 08 8440 2000 Business hours: 8:30am to 5:00pm, Monday to Friday. | |

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

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| GHS classification of the substance/mixture | Oxidizing Solids: Category 2 Hazardous to the Aquatic Environment - Acute Hazard: Category 1 Hazardous to the Aquatic Environment - Long-Term Hazard: Category 1 Eye Damage/Irritation: Category 1 Skin Corrosion/Irritation: Category 1A |
| Signal Word (s) | DANGER |
| Hazard Statement (s) | H272 May intensify fire; oxidiser. H314 Causes severe skin burns and eye damage. H410 Very toxic to aquatic life with long lasting effects. |
| Pictogram (s) | Flame over circle, Corrosion, Environment |



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| Precautionary statement – Prevention | P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking. P220 Keep/Store away from clothing/.../combustible materials. P221 Take any precaution to avoid mixing with combustibles ... P260 Do not breathe dust/fume/gas/mist/vapours/spray. P264 Wash thoroughly after handling. P273 Avoid release to the environment. |
| Precautionary statement – Response | P280 Wear protective gloves/protective clothing/eye protection/face protection. Swallowed P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Skin P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P363 Wash contaminated clothing before reuse. Inhaled P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for |



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| Precautionary statement – Storage | breathing. P310 Immediately call a POISON CENTER or doctor/physician. |
| Precautionary statement – Disposal | Eyes P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| Other Information | Fire P370+P378 In case of fire: Use dry sand or flooding quantities of water for extinction. P405 Store locked up. P501 Dispose of contents/container to an approved waste disposal plant. |
| | Persons exhibiting the condition of generalised argyria, and who subsequently died from unrelated disease, showed, on autopsy, a deposition of silver in the blood vessel walls, kidneys, testes, pituitary, choroid plexus, and mucous membranes of the nose, maxillary antra, trachea, and bronchi. Once deposited, there is no known method by which the silver can be eliminated; the pigmentation is permanent and usually noticeable in the conjunctiva of the eye first. |

3. Composition/information on ingredients

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|----------------------------------|----------------|------------|-------------------|----------------------|--------------------|
| Chemical Characterization | Solid | | | | |
| Ingredients | <u>Name</u> | <u>CAS</u> | <u>Proportion</u> | <u>Hazard Symbol</u> | <u>Risk Phrase</u> |
| | Silver nitrate | 7761-88-8 | 100 % | | |

4. First-aid measures

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| Inhalation | If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately obtain medical aid if cough or other symptoms appear. |
| Ingestion | Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice. |
| Skin | Wash affected area thoroughly with copious amounts of running water. Remove contaminated clothing and wash before reuse. If symptoms develop seek medical attention. |
| Eye contact | Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek medical attention. |
| First Aid Facilities | Maintain eyewash fountain and safety shower in work area. |
| Advice to Doctor | Treat symptomatically based on judgement of doctor and individual reactions of the patient. |
| Other Information | For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor. |

5. Fire-fighting measures

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| Hazards from Combustion Products | May liberate toxic fumes in fire such as oxygen, toxic fumes, nitrous gases, toxic oxides of nitrogen, silver/silver oxides. |
| Specific Methods | Small fire: USE FLOODING QUANTITIES OF WATER. Do not use dry chemicals, CO2 or foam. If safe to do so, move undamaged containers from fire area. Do not move cargo if cargo has been exposed to heat. Large fire: Flood fire area with water from a protected position. Cool containers with flooding quantities of water until well after fire is out - If impossible, withdraw from area and let fire burn. Avoid getting water inside containers: a violent reaction may occur. Dam fire control water for later disposal. |
| Specific hazards arising from the chemical | Will accelerate burning when involved in a fire. May explode from heating, shock, friction or contamination. May react explosively with hydrocarbons (fuels). May ignite combustibles (wood, paper, clothing, etc). Fire may produce irritating, poisonous, and/or corrosive gases. Containers may explode when heated. Runoff may create fire or explosion hazard. |
| Hazchem Code | 1Y |
| Decomposition Temp. | 440 °C |
| Precautions in connection with Fire | Wear SCBA and chemical splash suit with full breathing apparatus. Structural firefighter's uniform will provide limited protection. |

6. Accidental release measures



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| Spills & Disposal | Eliminate all ignition sources (no smoking, flares, sparks or flame) within at least 15m. Do NOT touch or walk through this product. Stop leak if safe to do so. Prevent entry into waterways, drains, confined areas. Prevent dust cloud. Use clean non-sparking tools to collect material and place it into loosely-covered plastic containers for later disposal. SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL. |
| Personal Precautions | Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms. |
| Personal Protection | Wear protective clothing specified for normal operations (see Section 8) |
| Clean-up Methods - Small Spillages | Sweep up (avoid generating dust) and using clean non-sparking tools transfer to a clean, suitable, clearly labelled container for disposal in accordance with local regulations. |
| Other Information | Most organisations using silver compounds collect all silver residues for subsequent recovery. Any solids spill may be swept up for eventual recovery or disposal. Solutions could be washed to drain with a large volume of water, or alternatively treated with a salt solution and the resulting silver chloride collected for subsequent recovery. |

7. Handling and storage

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| Precautions for Safe Handling | Avoid ingestion and inhalation of vapour or dust. Avoid contact with eyes, skin, clothing and other combustible materials. Avoid prolonged or repeated exposure. If ingested, seek medical advice immediately and show the container or the label. Minimize dust generation and accumulation. Ensure good ventilation at the workplace. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Heat, shock, friction, or contact with other materials may cause fire or explosion. Keep away from heat and all sources of ignition - No smoking. Keep container dry. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Discard contaminated shoes. |
| Conditions for safe storage, including any incompatibilities | Keep container tightly closed when not in use, in a cool, dry, well-ventilated area away from incompatible substances. Keep well closed and protected from light and moisture. Sensitive to light. Store in light-resistant containers. Avoid storage on wood floors. Avoid contact with organics. Separate from acids, alkalies, reducing agents and combustibles. Keep away from heat, sparks, open flames and all sources of ignition. Oxidizing materials should be stored in a separate safety storage cabinet or room. |
| Storage Regulations | Refer Australian Standard AS 4326-1995 'The storage and handling of oxidizing agents'. |
| Storage Temperatures | Store at room temperature (15 to 25 °C recommended). |
| Unsuitable Materials | Wooden, metal, cardboard or paper. |

8. Exposure controls/personal protection

| Occupational exposure limit values | Name | STEL | | TWA | | Footnote |
|---|---|-------|-----|-------|-----|-----------------------------------|
| | | mg/m3 | ppm | mg/m3 | ppm | |
| | Silver nitrate | | | 0.01 | | Silver, soluble compounds (as Ag) |
| Other Exposure Information | A time weighted average (TWA) has been established for Silver, soluble compounds (as Ag) (Safe Work Australia) of 0.01 mg/m ³ and for Silver, metal (Safe Work Australia) of 0.1 mg/m ³ . The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. | | | | | |
| Appropriate engineering controls | In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. | | | | | |
| Respiratory Protection | Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection. | | | | | |



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| Eye Protection | The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336. |
| Hand Protection | Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: NR latex, vinyl and neoprene. Good: Nitrile rubber gloves |
| Personal Protective Equipment | Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken. |
| Body Protection | Flame retardant protective clothing. Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals. |
| Hygiene Measures | Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using. |

9. Physical and chemical properties

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| Form | Solid |
| Appearance | Colourless, transparent, tabular, rhombic crystals or white crystalline powder, becoming gray or grayish-black on exposure to light in the presence of organic matter. |
| Odour | Odourless. |
| Decomposition Temperature | 440 °C |
| Melting Point | 212 °C |
| Boiling Point | 433 °C |
| Solubility in Water | Very soluble, 1220 g/l at 0 °C. |
| Solubility in Organic Solvents | Readily soluble in ammonia water. Soluble in glycerol, diethyl ether and hot alcohol. Very slightly soluble in acetone. |
| Specific Gravity | 4.352 |
| pH | Aqueous and alcoholic soln are neutral to litmus; pH 5.4 - 6.4 (100 g/l H ₂ O). |
| Vapour Pressure | Not volatile |
| Vapour Density (Air=1) | 5.8 |
| Volatile Component | 0 %vol @ 21 °C. |
| Flammability | Not combustible but assists combustion of other substances. |
| Explosion Properties | Many reactions may cause explosion. Reacts with ammonia to form compounds that are sensitive to mechanical shock. Silver nitrate mixed with dry powdered magnesium may ignite explosively on contact with a drop of water. An explosive fulminate may be formed if silver nitrate is mixed with alcohols. |
| Molecular Weight | 169.87 |
| Oxidising Properties | Strong oxidizer. Contact with other material may cause fire. |
| Other Information | Bitter, caustic metallic taste. |

10. Stability and reactivity

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| Chemical Stability | Stable at room temperature in closed containers under normal storage and handling conditions. Light sensitive. Darkens on exposure to light. |
| Conditions to Avoid | Heat, flame, sources of ignition, light, contamination and incompatible materials. |
| Incompatible Materials | Reducing agents, combustible materials, organic materials, easily oxidized materials, acetylene + ammonia, acetylidene, alcohols, aldehydes, alkalis, alkali hydroxides, ammonia, ammonium compounds, antimony salts, arsenites, benzalkonium chloride, bromides, carbonates, carbides, charcoal, chlorides, chlorosulfonic acid, creosote, ferrous salts, halogenated acids and their salts, hydrazine and derivatives, hydrogen peroxide, hydrogen sulfide, hypophosphites, iodides, magnesium in powder form (with water), morphine salts, nitriles, non-metals, oils, organic nitro compounds, phosphates, sodium hydroxide, sugars, tannic acid, tannins, tartrates, thimerosal, thiocyanates, vegetable decoctions, and extracts, volatile oils. |
| Hazardous Decomposition Products | Oxygen, toxic fumes, nitrous gases, toxic oxides of nitrogen, silver/silver oxides. |



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Possibility of hazardous reactions Reacts with acetylene in presence of ammonia to form silver acetylide, a sensitive powerful detonator when dry. In the absence of ammonia, or when calcium acetylide is added to a silver nitrate soln, explosive double salts of silver acetylide and silver nitrate are produced. Mercurous acetylide precipitates silver acetylide from aqueous nitrate. Reaction with chlorosulfonic acid is violent with nitrosulfonic acid being formed. Reduced by hydrogen sulfide in the dark. Easily reduced to metallic silver by ferrous salts, arsenites, hypophosphites, tartrates, sugars, tannins, volatile oils. Dry powdered magnesium and silver nitrate may ignite explosively on contact with a drop of water. Reaction with ammonium hydroxide, sodium hydroxide and stirring may be explosive. Reaction with phosphorus, or sulfur, and shock may be violently explosive. Reaction with charcoal and shock may result in ignition. Highly sensitive explosive is formed when calcium carbide is added to silver nitrate solution. Reaction with alcohols may form an explosive fulminate. When purified phosphine was passed rapidly into a concentrated solution of silver nitrate an explosion occurred.

Hazardous Polymerization Will not occur.

11. Toxicological Information

Ingestion Corrosive. Swallowing can cause severe burns of the mouth, throat, stomach and gastrointestinal tract. Can cause sore throat, vomiting, diarrhoea. Poison. Symptoms include pain and burning in the mouth, blackening of the skin and mucous membranes, throat, and abdomen, salivation, vomiting of black material, diarrhoea, collapse, shock, coma and death. Ingestion of soluble silver salts may cause argyria, characterized by permanent blue-gray pigmentation of the skin, mucous membranes, and eyes. Lethal dose for humans is 2 grams, or about 28.6 mg/kg.

Inhalation Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include severe irritation, burning sensation, coughing, wheezing, laryngitis, shortness of breath, breathing difficulty, headache, nausea, vomiting and possible coma. May be absorbed into the body following inhalation with symptoms paralleling those from ingestion exposure. Dust deposits in the lungs may resemble a form of pneumoconiosis. Inhalation of silver metal dust and fume or of soluble silver compounds may eventually cause argyria, an unsightly blue-gray discoloration of the skin and mucous membranes, including gum tissue and conjunctiva of the eyes.

Skin Corrosive. Symptoms of redness, pain, and severe burn can occur.

Eye Corrosive. Can cause blurred vision, redness, pain, severe tissue burns and eye damage.

Carcinogenicity Nitrate or nitrite (ingested) under conditions that result in endogenous nitrosation are evaluated in the IARC Monographs (Vol. 94; in preparation) as Group 2A: Probably carcinogenic to humans.

Reproductive Toxicity Evidence of reproductive effects.

Chronic Effects May cause methemoglobinemia, which is characterized by chocolate-brown colored blood, headache, weakness, dizziness, breath shortness, cyanosis (bluish skin due to deficient oxygenation of blood), rapid heart rate, unconsciousness and possible death. Repeated inhalation may cause lung disease. Chronic inhalation or ingestion of silver salts may cause argyria characterized by a permanent blue-gray discoloration of the eyes, skin, mucous membranes, and internal organs. This malady results from the accumulation of silver in the body.

Mutagenicity Laboratory experiments have shown mutagenic effects.

12. Ecological information

Ecotoxicity Highly toxic for aquatic organisms. May cause long-term adverse effects in the aquatic environment. Forms corrosive mixtures with water even if diluted.

Persistence and degradability Methods for the determination of biodegradability are not applicable to inorganic substances.

Bioaccumulative Potential BCF: 200;
Highly bioaccumulative (Biological Concentration Factor 100-1000).

Environmental Protection Do not allow to enter waters, waste water, or soil!

13. Disposal considerations

Disposal Considerations Dispose of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information Dangerous Goods of Class 5.1 Oxidising Agents are incompatible in a placard load with any of the following: - Class 1, Class 2.1, Class 2.3, Class 3, Class 4, Class 5.2, Class 7, Class 8, Fire risk



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| | substances and combustible liquids. |
| U.N. Number | 1493 |
| UN proper shipping name | SILVER NITRATE |
| Transport hazard class(es) | 5.1 |
| Hazchem Code | 1Y |
| Packaging Method | 3.8.5.1 |
| Packing Group | II |
| EPG Number | 5B1 |
| IERG Number | 31 |

15. Regulatory information

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| Regulatory Information | Listed in the Australian Inventory of Chemical Substances (AICS). |
| Poisons Schedule | S6 |

16. Other Information

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| Literature References | 'Standard for the Uniform Scheduling of Medicines and Poisons No. 6', Commonwealth of Australia, February 2015. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007. Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010. Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'. Safe Work Australia, 'Hazardous Substances Information System, 2005'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'. Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. Chem-Supply accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives. |
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AgNO₃
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