

Safety Data Sheet

acc. to OSHA HCS

Printing date 01/23/2014

Reviewed on 08/21/2013

1 Identification

Product identifier
Product name: Silver nitrate
Stock number: 11414

CAS Number:
7761-88-8

EC number:
231-853-9

Index number:
047-001-00-2

Relevant identified uses of the substance or mixture and uses advised against.

No further relevant information available.

Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet
Manufacturer/Supplier:

Alfa Aesar, A Johnson Matthey Company

Johnson Matthey Catalog Company, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency telephone number:

During normal hours the Health, Safety and Environmental Department at (800) 343-0660. After normal hours call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008


GHS03 Flame over circle

Ox. Sol. 2 H272 May intensify fire; oxidizer.



GHS05 Corrosion

Met. Corr.1 H290 May be corrosive to metals.

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC


C; Corrosive

R34: Causes burns.



O; Oxidizing

R8: Contact with combustible material may cause fire.



N; Dangerous for the environment

R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Information concerning particular hazards for human and environment: Not applicable

Hazards not otherwise classified No information known.

Label elements
Labelling according to Regulation (EC) No 1272/2008

The substance is classified and labeled according to the CLP regulation.

Hazard pictograms


GHS03



GHS05

Signal word Danger

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Hazard statements

H272 May intensify fire; oxidizer.
 H290 May be corrosive to metals.
 H314 Causes severe skin burns and eye damage.

Precautionary statements

P221 Take any precaution to avoid mixing with combustibles.
 P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
 P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P405 Store locked up.
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

C - Oxidizing materials
 D2A - Very toxic material causing other toxic effects
 E - Corrosive material

**Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	3	Health (acute effects) = 3
FIRE	3	Flammability = 3
REACTIVITY	3	Physical Hazard = 3

Other hazards**Results of PBT and vPvB assessment**

PBT: Not applicable.

vPvB: Not applicable.

3 Composition/information on ingredients**Chemical characterization: Substances****CAS# Description:**

7761-88-8 Silver nitrate

Identification number(s):

EC number: 231-853-9

Index number: 047-001-00-2

4 First-aid measures**Description of first aid measures****General information** Immediately remove any clothing soiled by the product.**After inhalation**

Supply fresh air or oxygen; call for doctor.

In case of unconsciousness place patient stably in side position for transportation.

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

After eye contact

Call a doctor immediately.

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing

Drink copious amounts of water and provide fresh air. Immediately call a doctor.

Do not initiate vomiting.

Information for doctor**Most important symptoms and effects, both acute and delayed**

No further relevant information available.

Danger

Silver nitrate is caustic and irritating to the skin, eyes and mucous membranes, producing a persistent black stain, with possible tissue destruction. Absorption over a long period may cause "Argyria", a blue/grey discolouration of various tissues. Industrial argyria may be local, involving the formation of blue/grey particles in the skin and the conjunctivae, or generalised, which appears early on the face, spreading to the hands. This is only normally

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manifested after many years of gross over-exposure. Ingestion will cause violent abdominal pain and vomiting.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5 Fire-fighting measures**Extinguishing media****Suitable extinguishing agents**

Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Special hazards arising from the substance or mixture

This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

If this product is involved in a fire, the following can be released:

Nitrogen oxides (NOx)

Metal oxide fume

Advice for firefighters**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures**Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Environmental precautions:

Do not allow to enter sewers/ surface or ground water.

Do not allow product to reach sewage system or any water course.

Do not allow to penetrate the ground/soil.

Methods and material for containment and cleaning up:

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Prevention of secondary hazards:

Acts as an oxidizing agent on organic materials such as wood, paper and fats

Keep away from combustible material.

Reference to other sections

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling****Precautions for safe handling**

Thoroughly remove all dust particles.

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires:

Keep respiratory protective device available.

Substance/product can reduce the ignition temperature of flammable substances.

This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

Conditions for safe storage, including any incompatibilities**Storage****Requirements to be met by storerooms and receptacles:**

Due to photo-sensitivity, store product in brown-glass or stainless steel receptacles.

Information about storage in one common storage facility:

Store away from flammable substances.

Store away from reducing agents.

Store in the dark.

Do not store with organic materials.

Store away from metal powders.

Further information about storage conditions:

Store in the dark.

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Protect from exposure to light.

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Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters**Components with limit values that require monitoring at the workplace:****7761-88-8 Silver nitrate (100.0%)**

PEL (USA)	Long-term value: 0.01 mg/m ³ as Ag
REL (USA)	Long-term value: 0.01 mg/m ³ as Ag
TLV (USA)	Long-term value: 0.01 mg/m ³ as Ag
EL (Canada)	Short-term value: 0.03 mg/m ³ Long-term value: 0.01 mg/m ³ as Ag

Additional information: No data

Exposure controls**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands:

Impervious gloves

Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality.

Quality will vary from manufacturer to manufacturer.

Eye protection:

Tightly sealed goggles

Full face protection

Body protection: Protective work clothing.

9 Physical and chemical properties**Information on basic physical and chemical properties****General Information****Appearance:**

Form:	Crystalline
Color:	White
Odor:	Odorless
Odor threshold:	Not determined.

pH-value: Not applicable.

Change in condition

Melting point/Melting range:	212 °C (414 °F)
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined

Flash point:	Not applicable
Flammability (solid, gaseous)	Contact with combustible material may cause fire.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Auto igniting:	Not determined.

Danger of explosion: Not determined.

Explosion limits:

Lower:	Not determined
Upper:	Not determined

Vapor pressure: Not applicable.

Density at 20 °C (68 °F): 4.352 g/cm³ (36.317 lbs/gal)

Relative density: Not determined.

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Vapor density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with	
Water at 0 °C (32 °F):	1220 g/l
Alcohols:	Slightly soluble
Ketones:	Slightly soluble
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
dynamic:	Not applicable.
kinematic:	Not applicable.
Other information	No further relevant information available.

10 Stability and reactivity**Reactivity** May intensify fire; oxidizer.**Chemical stability** Stable under recommended storage conditions.**Thermal decomposition / conditions to be avoided:**

To avoid thermal decomposition do not overheat.

Possibility of hazardous reactions

Reacts with organic substances

Acts as an oxidizing agent on organic materials such as wood, paper and fats

Reacts with reducing agents

Reacts with flammable substances

Incompatible materials:

Reducing agents

Flammable substances

Organic materials

Metal powders

Light

Hazardous decomposition products:

Nitrogen oxides (NOx)

Metal oxide fume

11 Toxicological information**Information on toxicological effects****Acute toxicity:**

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

LD/LC50 values that are relevant for classification:

Oral	LD50	1173 mg/kg (rat)
Irritation of eyes	severe	1 mg (rabbit)

Skin irritation or corrosion: Causes severe skin burns.**Eye irritation or corrosion:** Causes serious eye damage.**Sensitization:** No sensitizing effects known.**Germ cell mutagenicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.

Carcinogenicity:

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.

Reproductive toxicity:

The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.

Specific target organ system toxicity - repeated exposure: No effects known.**Specific target organ system toxicity - single exposure:** No effects known.**Aspiration hazard:** No effects known.**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12 Ecological information**Toxicity****Aquatic toxicity:** No further relevant information available.

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Persistence and degradability No further relevant information available.**Behavior in environmental systems:****Bioaccumulative potential** No further relevant information available.**Mobility in soil** No further relevant information available.**Ecotoxicological effects:****Remark:** Very toxic for aquatic organisms**Additional ecological information:****General notes:**

Do not allow material to be released to the environment without proper governmental permits.

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

May cause long lasting harmful effects to aquatic life.

Avoid transfer into the environment.

Very toxic for aquatic organisms

Results of PBT and vPvB assessment**PBT:** Not applicable.**vPvB:** Not applicable.**Other adverse effects** No further relevant information available.**13 Disposal considerations****Waste treatment methods****Recommendation**

Contact waste processors for recycling information.

Consult state, local or national regulations to ensure proper disposal.

Waste disposal key number according to the European Waste Catalogue:

Contaminated salts and their solutions:

06 03 99 Wastes n. o. s.

Uncleaned packagings:**Recommendation:** Disposal must be made according to official regulations.**14 Transport information****UN-Number****DOT, ADR, IMDG, IATA**

UN1479

UN proper shipping name**DOT**

Oxidizing solid, n.o.s. (Silver nitrate)

ADR

1479 Oxidizing solid, n.o.s. (Silver nitrate)

IMDG, IATA

OXIDIZING SOLID, N.O.S. (Silver nitrate)

Transport hazard class(es)**DOT****Class**

5.1 Oxidising substances.

Label

5.1

ADR**Class**

5.1 (O2) Oxidizing substances

Label

5.1

IMDG, IATA**Class**

5.1 Oxidising substances.

Label

5.1

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Packing group DOT, ADR, IMDG, IATA	I
Environmental hazards:	Environmentally hazardous substance, solid
Special precautions for user	Warning: Oxidizing substances
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
DOT	
Marine Pollutant (DOT):	No
UN "Model Regulation":	UN1479, Oxidizing solid, n.o.s. (Silver nitrate), 5.1, I

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

SARA Section 313 (specific toxic chemical listings)

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California Proposition 65

Prop 65 - Chemicals known to cause cancer Substance is not listed.

Prop 65 - Developmental toxicity Substance is not listed.

Prop 65 - Developmental toxicity, female Substance is not listed.

Prop 65 - Developmental toxicity, male Substance is not listed.

Information about limitation of use: For use only by technically qualified individuals.

Other regulations, limitations and prohibitive regulations

Substances of very high concern (SVHC) according to REACH, Article 57

Substance is not listed.

REACH - Pre-registered substances Substance is listed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Health, Safety and Environmental Department.

Reference Sources:

CRC Handbook of Chemistry and Physics
CRC Press

Hawley's Condensed Chemical Dictionary
Van Nostrand Reinhold, New York

National Institute for Occupational Safety and Health
Registry of Toxic Effects of Chemical Substances
U. S. Government Printing Office, Washington D. C.

Richard J. Lewis, Sr.
Sax's Dangerous Properties of Industrial Materials
Van Nostrand Reinhold, New York

The Merck Index
Merck & Co., Inc., Rahway N. J.

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L. Bretherick
Handbook of Chemical Hazards
Butterworths

L. Roth, U. Weller
Gefährliche chemische Reaktionen
ecomed verlag, Landsberg

Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organization

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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