

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 24.01.2018

Version number 2

Revision: 24.01.2018

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

· **Trade name:** Silver(I) nitrate
Article number:
4020410101

· **CAS Number:**
7761-88-8

· **EC number:**
231-853-9

· **Index number:**
047-001-00-2

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.

Sector of Use

- SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
- SU5 Manufacture of textiles, leather, fur
- SU8 Manufacture of bulk, large scale chemicals (including petroleum products)
- SU9 Manufacture of fine chemicals
- SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
- SU13 Manufacture of other non-metallic mineral products, e.g. plasters, cement
- SU16 Manufacture of computer, electronic and optical products, electrical equipment
- SU19 Building and construction work
- SU20 Health services
- SU23 Electricity, steam, gas water supply and sewage treatment

Product category

- PC1 Adhesives, sealants
- PC8 Biocidal products
- PC9a Coatings and paints, thinners, paint removers
- PC14 Metal surface treatment products
- PC15 Non-metal-surface treatment products
- PC16 Heat transfer fluids
- PC18 Ink and toners
- PC19 Intermediate
- PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
- PC21 Laboratory chemicals
- PC23 Leather treatment products
- PC25 Metal working fluids
- PC26 Paper and board treatment products
- PC28 Perfumes, fragrances
- PC30 Photo-chemicals
- PC31 Polishes and wax blends
- PC32 Polymer preparations and compounds
- PC34 Textile dyes, and impregnating products
- PC35 Washing and cleaning products (including solvent based products)
- PC36 Water softeners
- PC37 Water treatment chemicals
- PC38 Welding and soldering products, flux products

The above listed product categories refer to the following exposure scenario:

Occupational exposure scenario for the manufacture and industrial use of silver nitrate crystals.

Possible other categories -> see attached exposure scenarios.

Process category

- PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
- PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
- PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
- PROC4 Chemical production where opportunity for exposure arises
- PROC5 Mixing or blending in batch processes

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PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
 PROC13 Treatment of articles by dipping and pouring
 PROC14 Tableting, compression, extrusion, pelletisation, granulation
 PROC15 Use as laboratory reagent
 PROC19 Manual activities involving hand contact
 PROC21 Low energy manipulation and handling of substances bound in/on materials or articles
 The above listed process categories refer to the following exposure scenario:
 Occupational exposure scenario for the manufacture and industrial use of silver nitrate crystals.
 Possible other categories -> see attached exposure scenarios.

· **Environmental release category**

ERC1 Manufacture of the substance
 ERC5 Use at industrial site leading to inclusion into/onto article
 ERC6a Use of intermediate

· **Article category AC8 Paper articles**

· **Application of the substance / the mixture** Initial product for chemical reactions

· **1.3 Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

Wieland Edelmetalle GmbH
 Schwenninger Str. 13
 75179 Pforzheim
 Telefon +49 (07231)-1393-0, Telefax +49 (07231)-1393-100

· **Further information obtainable from:**

msds@wieland-edelmetalle.de
 Wieland Edelmetalle GmbH
 www.wieland-edelmetalle.de

· **1.4 Emergency telephone number:**

Emergency CONTACT (24-Hour-Number):GBK GmbH +49 (0)6132-84463

SECTION 2: Hazards identification

· **2.1 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; oxidiser.



GHS05 corrosion

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

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



GHS09 environment

Aquatic Acute 1 H400 Very toxic to aquatic life.

Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

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- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**
The substance is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS03 GHS05 GHS09

- **Signal word** Danger
- **Hazard-determining components of labelling:**
silver nitrate (<250 µm)
- **Hazard statements**
H272 May intensify fire; oxidiser.
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H410 Very toxic to aquatic life with long lasting effects.
- **Precautionary statements**
P210 Keep away from heat. - No smoking.
P221 Take any precaution to avoid mixing with combustibles.
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.
- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

- **3.1 Chemical characterisation: Substances**
- **CAS No. Description**
7761-88-8 silver nitrate (<250 µm)
- **Identification number(s)**
- **EC number:** 231-853-9
- **Index number:** 047-001-00-2

SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:**
Immediately remove any clothing soiled by the product.
Take affected persons out of danger area and lay down.
- **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.

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- If skin irritation continues, consult a doctor.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; call for medical help immediately.
- **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.
- **5.2 Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Nitrogen oxides (NO_x)
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.
- **Additional information**
Cool endangered receptacles with water spray.
The substance itself does not burn, but in contact with combustible substances it increases the risk of fire and can fuel any existing fire substantially.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Avoid formation of dust.
Ensure adequate ventilation
- **6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
Use neutralising agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **6.4 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.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
Thorough dedusting.
Keep receptacles tightly sealed.
- **Information about fire - and explosion protection:**
The product is not flammable.
Substance/product is oxidising when dry.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store only in the original receptacle.
- **Information about storage in one common storage facility:** Store away from flammable substances.

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- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in dry conditions.
Protect from exposure to the light.
- **Storage class:** 5.1 B
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.

8.1 Control parameters

- **Ingredients with limit values that require monitoring at the workplace:**

7761-88-8 silver nitrate (<250 µm)

WEL	Long-term value: 0.01 mg/m ³ as Ag
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· DNELs

7761-88-8 silver nitrate (<250 µm)

Inhalative	DNEL	0.016 mg/kg (-)
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· PNECs

7761-88-8 silver nitrate (<250 µm)

PNECfreshwater	0.04 µg/l (-) (Soluble Ag)
PNECmarine	0.86 µg/l (-) (Soluble Ag)
PNECsediment freshw.	438 mg/kg dwt (-) (Ag)
PNECsediment marine	438 mg/kg dwt (-) (Ag)
PNECsoil	0.794 mg/kg wwt (-) (Ag)
PNECSTP	0.025 mg/l (-) (Soluble Ag)

- **Additional information:** The lists valid during the making were used as basis.

8.2 Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:

- Keep away from foodstuffs, beverages and feed.
- Immediately remove all soiled and contaminated clothing
- Wash hands before breaks and at the end of work.
- Avoid contact with the eyes and skin.

· Respiratory protection:

- Suitable respiratory protective device recommended.
- Short term filter device:
Filter P2
Filter P3

· Protection of hands:



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.


Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

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- **Material of gloves**
Chloroprene rubber, CR
Butyl rubber, BR
Nitrile rubber, NBR
Natural rubber, NR
Fluorocarbon rubber (Viton)
- **Penetration time of glove material**
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Not suitable are gloves made of the following materials:**
Strong material gloves
Leather gloves
- **Eye protection:**
 Tightly sealed goggles
- **Body protection:** Protective work clothing

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· **Form:** Crystalline powder

· **Colour:** Colourless

· **Odour:** Nearly odourless

· **Odour threshold:** Not determined.

· **pH-value (100 g/l) at 20 °C:** 5,4 - 6,4

· **Change in condition**

· **Melting point/freezing point:** 212 °C

· **Initial boiling point and boiling range:** 444 °C

· **Flash point:** Not applicable.

· **Flammability (solid, gas):** Contact with combustible material may cause fire.

· **Ignition temperature:**

· **Decomposition temperature:** 250 °C

· **Auto-ignition temperature:** Not determined.

· **Explosive properties:** Not determined.

· **Explosion limits:**

· **Lower:** Not determined.

· **Upper:** Not determined.

· **Vapour pressure:** Not applicable.

· **Density at 20 °C:** 4,35 g/cm³

· **Bulk density at 20 °C:** 2350 kg/m³

· **Relative density** Not determined.

· **Vapour density** Not applicable.

· **Evaporation rate** Not applicable.

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· Solubility in / Miscibility with water at 20 °C:	2160 g/l
· Partition coefficient: n-octanol/water:	Not determined.
· Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
Organic solvents:	0,0 %
Solids content:	100,0 %
· 9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** To avoid thermal decomposition do not overheat.
- **10.3 Possibility of hazardous reactions**
Violent reaction with concentrated alkali and oxidising agents.
May produce violent reactions with bases and numerous organic substances including alcohols and amines.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**
Oxygen
Nitrogen oxides
Nitrogen oxides (NOx)

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
 - **Acute toxicity** Based on available data, the classification criteria are not met.
- | | | |
|--|------|--------------------|
| · LD/LC50 values relevant for classification: | | |
| 7761-88-8 silver nitrate (<250 µm) | | |
| Oral | LD50 | >2,000 mg/kg (rat) |
- **Primary irritant effect:**
 - **Skin corrosion/irritation**
Causes severe skin burns and eye damage.
 - **Serious eye damage/irritation**
Causes severe skin burns and eye damage.
 - **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- | | | |
|--|------------------|--|
| · Repeated dose toxicity | | |
| 7761-88-8 silver nitrate (<250 µm) | | |
| Oral | Repeat dose tox. | 1.5 mg/kg bw/d (rat) (silver nitrateNOAELcorr) |
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
 - **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
 - **Carcinogenicity** Based on available data, the classification criteria are not met.
 - **Reproductive toxicity** Based on available data, the classification criteria are not met.
 - **STOT-single exposure** Based on available data, the classification criteria are not met.
 - **STOT-repeated exposure** Based on available data, the classification criteria are not met.

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· **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

· 12.1 Toxicity

· Aquatic toxicity:

7761-88-8 silver nitrate (<250 µm)

EC10	0.19 µg/l (217d) (<i>Salmo trutta</i> (brown trout)) (Silver nitrate)
EC10	0.17 µg/l (196d) (<i>Onchorhynchus mykiss</i> (rainbow trout)) (Silver nitrate)
EC10	0.39 µg/l (32d) (<i>Pimephales promelas</i> (fathead minnow)) (Silver nitrate)
EC10	10.33 µg/l (7d) (<i>Lemna paucisostata</i> (aquatic plants)) (Silver nitrate)
EC10	0.54 µg/l (24h) (<i>Chlamydomonas reinhardtii</i> (algae)) (Silver nitrate)
	0.41 µg/l (24h) (<i>Pseudokirchneriella subcapitata</i> (algae)) (Silver nitrate)
EC10	1.48 µg/l (20d) (<i>Isonychia bicolor</i> (Mahogany Duns)) (Silver nitrate)
EC10	1.68 µg/l (21d) (<i>Corbicula fluminea</i> (freshwater clam)) (Silver nitrate)
	2.14 µg/l (21d) (<i>Daphnia magna</i> (water flea)) (Silver nitrate)
EC10	0.45 µg/l (15d) (<i>Nostoc Muscorum</i> (algae)) (Silver chloride)
NOEC	130 µg/l (28d) (<i>Menidia beryllina</i> (neotropical silversid)) (Silver nitrate)
NOEC	1.2 µg/l (14d) (<i>Champia parvula</i> (algae)) (Silver nitrate)
	1 µg/l (14d) (<i>Stenonema modestum</i> (Mayfly)) (Silver nitrate)
NOEC	8.6 µg/l (30d) (<i>Arbacia punctulata</i> (sea urchin)) (Silver nitrate)
NOEC	1 µg/l (7d) (<i>Ceriodaphnia reticulata</i> (water flea)) (Silver nitrate)
	7 µg/l (7d) (lem) (Silver nitrate)

· **12.2 Persistence and degradability** No further relevant information available.

· 12.3 Bioaccumulative potential

7761-88-8 silver nitrate (<250 µm)

Bioaccumulation	70 (<i>Cyprinus carpio</i>) (Test material: silver cyanide)
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· **12.4 Mobility in soil** No further relevant information available.

· Ecotoxicological effects:

· Remark:

Toxic for fish
Toxic for algae

· Additional ecological information:

· General notes:

Also poisonous for fish and plankton in water bodies.
Very toxic for aquatic organisms
Water danger class 3 (German Regulation) (Assessment by list): extremely hazardous for water
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.

· 12.5 Results of PBT and vPvB assessment

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **12.6 Other adverse effects** No further relevant information available.

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SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**

· **Recommendation**

Must not be disposed together with household garbage. Do not allow product to reach sewage system.
 Contact manufacturer for recycling information.

· **European waste catalogue**

06 00 00	WASTES FROM INORGANIC CHEMICAL PROCESSES
06 10 00	wastes from the MFSU of nitrogen chemicals, nitrogen chemical processes and fertiliser manufacture
06 10 02*	wastes containing hazardous substances

· **Uncleaned packaging:**

· **Recommendation:**

Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.
 Packagings that may not be cleansed are to be disposed of in the same manner as the product.

· **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

SECTION 14: Transport information

· **14.1 UN-Number**

· **ADR, IMDG, IATA**

UN1493

· **14.2 UN proper shipping name**

· **ADR**

1493 SILVER NITRATE, ENVIRONMENTALLY HAZARDOUS

· **IMDG, IATA**

SILVER NITRATE

· **14.3 Transport hazard class(es)**

· **ADR**



· **Class**

5.1 (O2) Oxidising substances.

· **Label**

5.1

· **IMDG**



· **Class**

5.1 Oxidising substances.

· **Label**

5.1

· **IATA**



· **Class**

5.1 Oxidising substances.

· **Label**

5.1

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· 14.4 Packing group · ADR, IMDG, IATA	II
· 14.5 Environmental hazards: · Marine pollutant:	Yes Symbol (fish and tree)
· Special marking (ADR):	Symbol (fish and tree)
· 14.6 Special precautions for user · Danger code (Kemler): · EMS Number: · Segregation groups	Warning: Oxidising substances. 50 F-A,S-Q Heavy metals and their salts (including their organometallic compounds)
· 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR · Limited quantities (LQ) · Transport category · Tunnel restriction code	1 kg 2 E
· UN "Model Regulation":	UN1493, SILVER NITRATE, ENVIRONMENTALLY HAZARDOUS, 5.1, II

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** Substance is not listed.
- **Seveso category**
P8 OXIDISING LIQUIDS AND SOLIDS
E1 Hazardous to the Aquatic Environment
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 50 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 200 t
- **National regulations:**
- **Waterhazard class:** Water danger class 3 (Assessment by list): extremely hazardous for water.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 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.

- **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 Organisation
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
IATA: International Air Transport Association
GHS: Globally Harmonised 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)

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DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Ox. Sol. 2: Oxidizing solids – Category 2
Met. Corr. 1: Corrosive to metals – Category 1
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

· *** Data compared to the previous version altered.**

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