

# Safety Data Sheet

## Silver

Revision Date: 4/6/2016  
Date Issued: 2/21/2019

### 1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY / UNDERTAKING

<b>Product name</b>	Silver
<b>Product code</b>	NM-0023
<b>CAS</b>	7440-22-4
<b>REACH No. :</b>	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
<b>Identified uses</b>	Laboratory chemicals, Manufacture of substances
<b>Supplier</b>	IoLiTec Ionic Liquids Technologies GmbH Salzstrasse 184 D – 74076 Heilbronn Germany
<b>Telephone</b>	+49 (0)7131-89839-0
<b>Fax</b>	+49 (0)7131-89839-109
<b>Emergency telephone</b>	+49 (0)176-84850874
<b>Email</b>	msds@iolitec.de

### 2 HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

Not a hazardous substance or mixture according to EC-directives 67/548/EEC or  
1999/45/EC.

Not a dangerous substance according to GHS.

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### 2.2 Label elements

#### Labelling (REGULATION (EC) No 1272/2008, GHS)

Not a dangerous substance according to GHS.

**Label for supply** none

#### Precautionary statement(s)

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray .

P280 Wear protectic 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.

P273 Avoid release to the environment.

#### Labelling (67/548/EEC or 1999/45/EC)

**Label for supply** none

#### S-phrases(s)

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Caution - substance not yet tested completely.

### 3 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient name	Contents	Health(Class)	Risk(R/No.)
Silver	>99.5%		Substance not yet fully tested!
<b>Formula</b>	<b>Molecular Weight</b>		
Ag	107.87 g/mol		

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### 4 FIRST AID MEASURES

<b>General</b>	Contaminated clothing should be removed and washed before being reused.
<b>Inhalation</b>	Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen.
<b>Ingestion</b>	Immediately rinse mouth and provide fresh air. Get medical attention immediately.
<b>Skin</b>	Wash the skin immediately with water.
<b>Eyes</b>	Promptly wash eyes with plenty of water while lifting the eye lids. Get medical attention immediately. Continue to rinse for at least 15 minutes.

### 5 FIRE FIGHTING MEASURES

<b>Extinguishing media</b>	Use: Fire-extinguishing powder. Dry sand.
<b>Special risks</b>	Flammable powder. Emission of toxic fumes under fire conditions possible.
<b>Protective measures in fire</b>	Wear self-contained breathing apparatus and protective clothing.

### 6 ACCIDENTAL RELEASE MEASURES

<b>Personal precautions during spill</b>	Evacuate area. Shut off all heat or ignition sources. Avoid sparks, flames, heat and smoking. Ventilate. Wear self-contained breathing apparatus, rubber boots and gloves.
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### Spill cleanup methods

Avoid contact with skin or inhalation of spillage, dust or vapor, Avoid dust formation. Collect and reclaim or dispose in sealed containers in license waste.

## 7 HANDLING AND STORAGE

### Usage precautions

Handle under dry Argon.  
Avoid contact with eyes, skin and clothing.  
Keep away from heat, sparks and open flame.  
Do not use in confined spaces without adequate ventilation and/or respirator.

### Storage precautions

Store in a closed container at moderate temperatures in dry, well ventilated area.  
Protect against electrostatic charges.

### Special storage criteria

Pressure development possible. Store away from acids and alkalies.

## 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Personal protective equipment

#### Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

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The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

### Body Protection

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory protection

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### Exposure limits

#### RECOMMENDATIONS OF MAK-COMMISSION

This data is recommended by scientific experience and is not established law.

0.1 mg/m<sup>3</sup> with reference to the inhalable fraction Limitation of exposure peaks:

Excursion factor 8 Duration 15 min, mean; 4 times per shift; interval 1 hour

Pregnancy: Group D

A classification according to groups A-C is not possible, because either there is no data available or the available data is insufficient for a final evaluation.

## 9 PHYSICAL AND CHEMICAL PROPERTIES

<b>Color</b>	grey
<b>Odor/taste</b>	No characteristic odor.
<b>Melting Point</b>	960.8°C
<b>Boiling Point</b>	2210°C
<b>Density</b>	10.491 g/cm <sup>3</sup> (20°C)
<b>Solubility in water</b>	Insoluble

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### 10 STABILITY AND REACTIVITY

**Hazardous chemical reactions:**

Silver in its solid state is stable and non-combustible, the powder is combustible and reactive. Explosive silver acetylide can be generated by reaction of acetylene with silver powder and even with the solid metal. In reaction with ammonia and hydrazine, explosive compounds can be formed, especially with silver salt solutions. Peroxides, ozonides and other oxidants can be decomposed by silver powder. Various silver compounds, especially, when dry, are explosive.

**Risk of explosion in contact with:**

acetylene compounds; ammonia compounds; aziridine; bromine azide; 1-bromo-3-propyne; ethanol + nitric acid; ethylenehydroperoxide; ethylene oxide; oxalic acid (heat); tartaric acid (heat);

**The substance can react dangerously with:**

halogens, nitric acid, chlorine trifluoride; iodoform; conc. sulphuric-acid;

### 11 TOXICOLOGICAL INFORMATION

**Acute toxicity**

LD50 Oral – rat – male > 5.000 mg/kg

**Skin corrosion/irritation**

no data available

**Serious eye damage/eye irritation**

no data available

**Respiratory or skin sensitization**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

no data available

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### Reproductive toxicity

no data available

### Specific target organ toxicity - single exposure

no data available

### Specific target organ toxicity - repeated exposure

no data available

### Aspiration hazard

no data available

### Subacute to chronic toxicity

Absorption of silver compounds by ingestion, inhalation or through broken skin can cause argyria, a permanent bluish-grey discoloration of the skin, conjunctiva and mucous membranes.

### Potential health effects

**Ingestion** no data available

**Inhalation** no data available

**Skin** no data available

**Eyes** no data available

### Additional Information

RTECS: Not available

**Full Data on the toxicity of this product are not available. Hazardous properties cannot be excluded.**

## 12 ECOLOGICAL INFORMATION

### LC50 Fish (96 hours)

Minimum:	0,00213 mg/l
Maximum:	58 mg/l
Median:	0,00807 mg/l
Study number:	26

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Reference for median: Klaine, S.J., T.W. La Point, G.P. Cobb, B.L. Forsythe II, T.P. Bills, M.D. Wenzholz, and R.D. Jeffers 1996. Influence of Water Quality Parameters on Silver Toxicity: Preliminary Result. In: A.W.Andren and T.W.Bober (Eds.), 3rd Int.Conf.Proc.Transport, Fate and Effects of Silver in the Environment, Aug.6-9, 1995, Washington, D.C. :65-77; Goettl, J.P.Jr., P.H. Davies, and J.R. Sinley 1976. Water Pollution Studies. In: D.B.Cope (Ed.), Colorado Fish.Res.Rev.1972-1975, DOW-R-R-F72-75, Colorado Div.of Wildl., Boulder, CO :68-75

### LC50 Crustaceans (48 hours)

Minimum: 0,0015 mg/l  
Maximum: 4,5 mg/l  
Median: 0,015 mg/l  
Study number: 7

Reference for median: Mount, D.I., and T.J. Norberg 1984. A Seven-Day Life-Cycle Cladoceran Toxicity Test. Environ.Toxicol.Chem. 3(3):425-434 (Author Communication Used)

### EC50 Crustaceans (48 hours)

Minimum: 0,00024 mg/l  
Maximum: 0,0095 mg/l  
Median: 0,0092 mg/l  
Study number: 3

Reference for median: Office of Pesticide Programs 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)). Environmental Fate and Effects Division, U.S.EPA, Washington, D.C.

### EC50 Algae (72 or 96 hours)

Test duration: 96 Stunden  
Minimum: 0,00163 mg/l  
Maximum: 0,00234 mg/l  
Median: 0,00198 mg/l  
Study number: 2

Reference for median: Hiriart-Baer, V.P., C. Fortin, D.Y. Lee, and P.G.C. Campbell 2006. Toxicity of Silver to Two Freshwater Algae, Chlamydomonas reinhardtii and Pseudokirchneriella subcapitata, Grown Under Continuous Culture Conditions: Influence of Thiosulphate. Aquat.Toxicol. 78(2):136-148



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### 13 DISPOSAL CONSIDERATIONS

**Disposal method** Non-hazardous waste according to Waste Catalogue Ordinance (AVV). If there is no way of recycling it must be disposed of in compliance with the respective national and local regulations.

### 14 TRANSPORT INFORMATION

**General** Not classified as dangerous for transport purposes.

**Road transport notes** Not classified as dangerous for road transport.

**Rail transport notes** Not classified as dangerous for rail transport.

**Sea transport notes** Not classified as dangerous for sea transport.

**Air transport notes** Not classified as dangerous for air transport.

### 15 REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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

**Classification according to German Regulation KBwS:**

Reg.no. 979: German Regulation WGK 1 (Water hazard class 1)  
severe hazard to waters. Do not allow to enter waters, waste water, or soil.

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### 16 OTHER INFORMATION

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