

# Material Safety Data Sheet

## Silver Nanopowder

Revision Date: 01/12/2010

Date Issued: 11/24/2006

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

<b>Product name</b>	Silver
<b>Product code</b>	NM-0023-HP
<b>Supplier</b>	IoLiTec Ionic Liquids Technologies GmbH Salzstrasse 184 D-74076 Heilbronn Germany
<b>Telephone</b>	+49 (0)7131 – 898390
<b>Fax</b>	+49 (0)7131 – 89839109
<b>Emergency telephone</b>	+49 (0)179 – 5322578
<b>Email</b>	msds@iolitec.de

### 2 HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

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

Harmful by inhalation. Irritating to eyes, respiratory system and skin.

##### Classification (REGULATION (EC) No 1272/2008)

Acute toxicity (inhalation), Category 4, H332

Skin corrosion/irritation, Category 2, H315

Serious eye damage/Eye irritation, Category 2, H319

Specific Target Organ Toxicity - Single exposure: Respiratory tract irritation, Category 3, H335

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### 2.2 Label elements

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

#### Hazard description:

#### Label for supply



Xn Harmful

#### Information pertaining to particular dangers for man and environment

#### Risk phrases

R20: Harmful by inhalation.

R36/37/38: Irritating to eyes, respiratory system and skin.

#### Safety phrases

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

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

#### *Hazard statements*



Warning

#### H-phrases

H315: Causes skin irritation.

H319: Causes serious eye irritation.

H332: Harmful if inhaled.

H335: May cause respiratory irritation.

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### *Precautionary statements*

### **P-phrases**

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

P280: Wear protectic gloves/protective clothing/eye protection/face protection.

P302 + P352: IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

### **3 COMPOSITION / INFORMATION ON INGREDIENTS**

<b>Ingredient name</b>	Silver, 99.5 %
<b>CAS No.</b>	7440-22-4
<b>Empirical Formula</b>	Ag
<b>Molecular weight</b>	107.87 amu

### **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.

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### 5 FIRE FIGHTING MEASURES

**Extinguishing media**

Use: Fire-extinguishing powder. Dry sand.

**Special risks**

Flammable powder. Emission of toxic fumes under fire conditions possible.

**Protective measures in fire**

Wear self-contained breathing apparatus and protective clothing.

### 6 ACCIDENTAL RELEASE MEASURES

**Personal precautions during spill**

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.

**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.

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### Special storage criteria

Pressure development possible. Store away from acids and alkalis.

## 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Protective equipment

Safety goggles. Chemical resistant gloves. Protective clothing. Protective mask when high concentrations are present.

### Process control measures

Provide eyewash station and safety shower. Use engineering controls to reduce air contamination to permissible exposure levels.

### Ventilation

Provide adequate general and local exhaust ventilation.

### Respirators

Use high efficiency particulate respirator when high concentrations are present.

### Exposure limits

Silver metal (mg/m<sup>3</sup>)

ACGIH TLV 0.1; Austria MAK 0.01; Belgium TWA 0.1; Denmark TWA 0.01; Finland TWA 0.1; France VME 0.1; Germany MAK 0.01; Japan OEL 0.01; Korea TWA 0.1; Netherlands MAC-TGG 0.01; Norway TWA 0.01; Russia TWA 1-STEL; Sweden NGV 0.1; Switzerland MAK-W 0.01; United Kingdom TWA 0.1; USA PEL TWA 0.01

## 9 PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Powder

### Color

grey

### Odor/taste

No characteristic odor.

### Melting Point

960.8 °C

### Boiling Point

2210 °C

### Density

10.491 g/cm<sup>3</sup> (20 °C)

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**Solubility in water** Insoluble

### 10 STABILITY AND REACTIVITY

**Stability** No particular stability concerns if handled according to specifications.

**Conditions to avoid** Acids and bases

**Hazardous Decomposition**

**Products** Metal oxide fume.

### 11 TOXICOLOGICAL INFORMATION

**Ingestion** Harmful if swallowed.

**Inhalation** Harmful to mucous membranes.

**Skin** Irritating

**Eyes** Irritating

**Other information** Tumorigenic effects have been observed on tests with laboratory animals

**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.

### 12 ECOLOGICAL INFORMATION

**Environmental hazards** Avoid washing into water courses. Do not contaminate public drains or water supply.

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### 13 DISPOSAL CONSIDERATIONS

**Disposal method**

Contact specialist disposal companies.  
Dispose of in accordance with Local Authority requirements. Recover and reclaim or recycle, if practical.

### 14 TRANSPORT INFORMATION

**General**

Not classified as dangerous for transport purposes.

**UN No.**

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**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

In accordance with local and national regulations.

### 16 OTHER INFORMATION

#### DISCLAIMER

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT  
PURPOSED TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE.

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