

# 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 powder, ~150 nm
<b>Product code</b>	NM-0001-UP
<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, 99.95 %
<b>CAS No.</b>	7440-22-5
<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. Get medical attention if respiratory problems appear, provide 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 if irritation persists. Continue to rinse for at least 15 minutes.

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### 5 FIRE FIGHTING MEASURES

<b>Extinguishing media</b>	Carbon dioxide, water, water foam, dry chemical.
<b>Special risks</b>	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.
<b>Spill cleanup methods</b>	Avoid contact with skin or inhalation of spillage. Avoid dust formation. Collect and reclaim or dispose in sealed containers in license waste.

### 7 HANDLING AND STORAGE

<b>Usage precautions</b>	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.
<b>Storage precautions</b>	Store in a closed container. Store in a cool dry location with adequate ventilation.

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### Special storage criteria

Store away from strong oxidizers, acids, acetylene, ammonia, hydrogen peroxide. Avoid exposure to open flame.

## 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Protective equipment

Safety goggles with side shields. Chemical resident gloves.

Protective clothing. Protective mask when high concentrations are present (NIOSH/MSHA approved mask)

### 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.

### Exposure limits

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

ACGIH TLV 0.1

OSHA PEL 0.01

## 9 PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Powder

### Color

dark grey

### Odor/taste

No characteristic odor.

### Melting Point

961.8 °C

### Boiling Point

2162 °C

### Flammability

N/A

### Density

10.49 g/cm<sup>3</sup>

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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

Strong oxidizers, acids, acetylene, ammonia, hydrogen peroxide.

### Hazardous Decomposition

#### Products

Thermal or chemical decomposition may produce silver and silver oxide fumes.

## 11 TOXICOLOGICAL INFORMATION

### Eyes

May causes irritation.

### Skin

May causes irritation.

### Inhalation

May causes irritation of mucous membranes and respiratory tract.

### Primary routes of entry

Inhalation, eyes, skin.

### Target organs

Mucous membranes, respiratory tract, eyes, skin.

### Chronic effects

Prolonged or repeated contact with or inhalation of silver may result in argyria, a blue-grey discoloration of the eyes, skin or other body tissues.

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### 12 ECOLOGICAL INFORMATION

**Environmental hazards**

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

### 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

Not a hazardous material for transportation

**Land transport RID/ADR**

Class none

**Maritime transport IMDG**

Class none

**Air transport IATA**

Class none

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### 15 REGULATORY INFORMATION

In accordance with local and national regulations.

### 16 OTHER INFORMATION

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