

Material Safety Data Sheet

Silver Nanopowder

Revision Date: 02/04/2009

Date Issued: 11/24/2006

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

Product name Silver powder, ~150 nm
Product code NM-0001-UP
Supplier IoLiTec
Ionic Liquids Technologies GmbH
Ferdinand-Porsche-Straße 5/1
D-79211 Denzlingen
Germany
Fax +49 (0)7666 - 9129345
Emergency telephone +49 (0)179-5322578

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient name Silver, 99.95 %
CAS No. 7440-22-5
Empirical Formula Ag
Molecular weight 107.87 amu

3 HAZARDS IDENTIFICATION

Potential health effects

Immediate concerns WARNING! Inhalation may cause irritation.
Can cause eye and skin irritation. Avoid contact with skin, eyes and clothing. Wear protective goggles and gloves when handling this material. Wash thoroughly after handling.

Eyes May causes irritation.

Material Safety Data Sheet

Silver Nanopowder

Revision Date: 02/04/2009

Date Issued: 11/24/2006

Skin	May cause irritation.
Inhalation	May cause 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.

4 FIRST AID MEASURES

General	Contaminated clothing should be removed and washed before being reused.
Inhalation	Move the exposed person to fresh air at once. Get medical attention if respiratory problems appear, provide artificial respiration/oxygen.
Ingestion	Immediately rinse mouth and provide fresh air. Get medical attention immediately.
Skin	Wash the skin immediately with water.
Eyes	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.

5 FIRE FIGHTING MEASURES

Extinguishing media	Carbon dioxide, water, water foam, dry chemical.
----------------------------	--

Material Safety Data Sheet

Silver Nanopowder

Revision Date: 02/04/2009

Date Issued: 11/24/2006

Special risks	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. Avoid dust formation. Collect and reclaim or dispose in sealed containers in license waste.

7 HANDLING AND STORAGE

Usage precautions	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. Store in a cool dry location with adequate ventilation.
Special storage criteria	Store away from strong oxidizers, acids, acetylene, ammonia, hydrogen peroxide. Avoid exposure to open flame.

Material Safety Data Sheet

Silver Nanopowder

Revision Date: 02/04/2009

Date Issued: 11/24/2006

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/m³)

ACGIH TLV

0.1

OSHA PEL

0.01

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Powder

Color

Grey

Odor/taste

No characteristic odor.

Melting Point

961.8 °C

Boiling Point

2162 °C

Flammability

N/A

Density

10.49 g/cm³

Solubility in water

Insoluble

Material Safety Data Sheet

Silver Nanopowder

Revision Date: 02/04/2009

Date Issued: 11/24/2006

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.

12 ECOLOGICAL INFORMATION

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

Material Safety Data Sheet

Silver Nanopowder

Revision Date: 02/04/2009

Date Issued: 11/24/2006

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

15 REGULATORY INFORMATION

Label for supply None

Risk phase None

Safety phase None

Material Safety Data Sheet

Silver Nanopowder

Revision Date: 02/04/2009

Date Issued: 11/24/2006

16 OTHER INFORMATION

DISCLAIMER

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPOPOSED TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. IOLITEC SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT. THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR ANY PROCESS. IT IS THE USER'S RESPONSIBILTY TO SATISFY HIMSELF AS TO THE SUITABILITY OF SUCH INFORMATION FOR HIS OWN PARTICULAR USE.