

MicroCoat Technologies

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Unparalleled in Polymer Coatings and Adhesives Technology™

A little about silver

Silver is a Block D, Group 11, Period 5 element. The electronic configuration is $[\text{Kr}]4d^{10}5s^1$. In its elemental form silver's CAS number is 7440-22-4. The silver atom has a radius of 144.5 pm and its Van der Waals radius is 144 pm. Silver has a brilliant white metallic luster. It is a little harder than gold and is very ductile and malleable, being exceeded only by gold and perhaps palladium. Pure silver has the highest electrical and thermal conductivity of all metals, and possesses the lowest contact resistance. It is stable in pure air and water, but tarnishes when exposed to ozone, hydrogen sulfide, or air containing sulfur. Silver nitrate has wide application in painting, xerography, chemical electroplating, in components for electric batteries and in medicine as catalyst. Silver chloride is another important compound, due to its ductility and malleability.

| Formula | CAS No. | Appearance | Molecular Weight | Density | Melting Point | Boiling Point |
|---------|-----------|------------|------------------|-------------------------|---------------|---------------|
| Ag | 7440-22-4 | Silver | 107.87 | 10490 kg/m ³ | 961.78 °C | 2162 °C |

Material Safety Data Sheet

• 1 Identification of substance

- **Product NO:** S-Mite™
- **Name:** S-Mite HIV Inhibitor™

• 2 Composition/Data on components:

- **CAS #:** 7440-22-4
- **EINECS Number:** 231-131-3
- **Formula:** Ag
- **Synonyms:** Argentum * C.I. 77820 * L-3 * Shell silver * Silber (German) * Silver (ACGIH:OSHA) * Silver atom * Silver powder
- **RTECS Number:** VW3500000

• 3 Hazards identification

HMIS RATING

- **Health:** 0
- **Flammability:** 0
- **Reactivity:** 1

NFPA RATING

- **Health:** 0
- **Flammability:** 0
- **Reactivity:** 1

For additional information on toxicity, please refer to Section 11.

• 4 First aid measures

- **ORAL EXPOSURE**
If swallowed, wash out mouth with water provided person is conscious. Call a physician.
- **INHALATION EXPOSURE**
If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.
- **DERMAL EXPOSURE**
In case of contact, immediately wash skin with soap and copious amounts of water.
- **EYE EXPOSURE**

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

- **5 Fire fighting measures**
EXPLOSION DATA

- **Dust Potential:** This material, like most materials in powder form, is capable of creating a dust explosion.
FLASH POINT: N/A
AUTOIGNITION TEMP: N/A
FLAMMABILITY: N/A
EXTINGUISHING MEDIA
- **Suitable:** Sand or dry powder type agents specially designed for metal powder fires.
FIREFIGHTING
- **Protective Equipment:** Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
- **Specific Hazard(s):** Emits toxic fumes under fire conditions.

- **6 Accidental release measures**

- **PROCEDURE(S) OF PERSONAL PRECAUTION(S):**
Exercise appropriate precautions to minimize direct contact with skin or eyes and prevent inhalation of dust.
- **METHODS FOR CLEANING UP:**
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

- **7 Handling and storage**

HANDLING

- **User Exposure:** Avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.
STORAGE
- **Suitable:** Keep container closed. Keep away from heat, sparks, and open flame. Store under nitrogen.

Special Requirements:

Air sensitive. Store under inert gas

- **8 Exposure controls and personal protection**

ENGINEERING CONTROLS:

Safety shower and eye bath. Mechanical exhaust required.

PERSONAL PROTECTIVE EQUIPMENT

- **Respiratory:** Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks.
- **Hand:** Protective gloves.
- **Eye:** Chemical safety goggles.
GENERAL HYGIENE MEASURES:
Wash thoroughly after handling.
- **EXPOSURE LIMITS, RTECS:**
- **Country, Source, Type, Value:**

USA, ACGIH, TWA, 0.1 MG/M3 (METAL)
USA, MSHA, Standard-air TWA, 0.01 MG/M3
USA, OSHA, PEL 8H TWA, 0.01 MG(AG)/M3
New Zealand OEL

Remarks: check ACGIH TLV USA NIOSH TWA 0.01 MG/M3

• **9 Physical and chemical properties:**

- **Appearance Physical State:** Solid
- **Color:** Grey
- **Form:** Powder
- **Molecular Weight:** 107.87 AMU
- **pH:** N/A
- **BP/BP Range:** N/A
- **MP/MP Range:** 962 ° C
- **Freezing Point:** N/A
- **Vapor Pressure:** N/A
- **Vapor Density:** N/A
- **Saturated Vapor Conc.:** N/A
- **SG/Density:** N/A
- **Bulk Density:** N/A
- **Odor Threshold:** N/A
- **Volatile%:** N/A
- **LVOC Content:** N/A
- **Water Content:** N/A
- **Solvent Content:** N/A
- **Evaporation Rate:** N/A
- **Viscosity:** N/A
- **Surface Tension:** N/A
- **Partition Coefficient:** N/A
- **Decomposition Temp:** N/A
- **Flash Point:** N/A
- **Explosion Limits:** N/A
- **Flammability:** N/A
- **Autoignition Temp:** N/A
- **Refractive Index:** N/A
- **Optical Rotation:** N/A
- **Miscellaneous Data:** N/A
- **Solubility:** N/A

• **10 Stability and reactivity**

- **Thermal decomposition / conditions to be avoided:** Air.
- **Materials to be avoided:** Oxygen, Strong acids, Strong bases.
- **Dangerous reactions:** No dangerous reactions known
- **Dangerous products of decomposition:** Silver/silver oxides.

• **11 Toxicological information**

ROUTE OF EXPOSURE Skin Contact: May cause skin irritation. Skin Absorption: May be harmful if absorbed through the skin. Eye Contact: May cause eye irritation. Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled. Ingestion: May be harmful if swallowed. SIGNS AND SYMPTOMS OF EXPOSURE May cause argyria (a slate-gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate of silver). To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. CHRONIC EXPOSURE - CARCINOGEN Species: Rat Route of Application: Multiple Dose: 330 MG/KG Exposure Time: 43W Frequency: I Result: Tumorigenic:Tumors at site or application.

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Species: Rat Route of Application: Implant Dose: 2400 MG/KG Result: Tumorigenic: Tumors at site or application. Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Species: Mouse Route of Application: Implant Dose: 11 GM/KG Result: Tumorigenic: Tumors at site or application. Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Species: Rat Route of Application: Implant Dose: 2570 MG/KG Result: Tumorigenic: Tumors at site or application. Tumorigenic: Equivocal tumorigenic agent by RTECS criteria.

- **12 Ecological information:**

- **General notes:**

Do not allow material to be released to the environment without proper governmental permits.
Generally not hazardous for water.

- **13 Disposal considerations**

- **Product:**

- **Recommendation**

Consult state, local or national regulations for proper disposal.
Hand over to disposers of hazardous waste.
Must be specially treated under adherence to official regulations.

- **Uncleaned packagings:**

- **Recommendation:**

Disposal must be made according to official regulations.

- **14 Transport information**

- **Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)**

- **ADR/RID-GGVS/E Class:** None

- **Maritime transport IMDG/GGVSea:**

- **IMDG/GGVSea Class:** None

- **Air transport ICAO-TI and IATA-DGR:**

- **ICAO/IATA Class:** None

- **Transport/Additional information:**

Not dangerous according to the above specifications.

- **15 Regulatory information**

- **Designation according to EC guidelines:**

Observe the normal safety regulations when handling chemicals
The product is not subject to identification regulations under EC Directives and the Ordinance on Hazardous Materials (GefStoffV).

- **National regulations**

- **Information about limitation of use:**

For use only by technically qualified individuals.

- **Water hazard class:** Generally not hazardous for water.

- **16 Other information:**

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE

USED ONLY AS A GUIDE. MERELEX CORPORATION SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT.