

# Material Safety Data Sheet

Silver Powder & Flake

Date Prepared/Reviewed: 1-4-10

Revision: 06

## Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** Silver Powder and Flake (All Silver Powder & Flake formulations)

**Chemical Formula:** Ag

**CAS Number:** 7440-22-4

**Other Designations:** Silver Powder, Silver Flake (All formulations)

**General Use:** Electrical and electronic applications

**Manufacturer:** Ames Goldsmith Corp., 21 Roger Street, Glens Falls, New York, 12801, Phone (518) 792-5808, FAX (518) 792-1034 (Monday – Friday 8am to 5pm), (518) 792-5808, Chemtrec: 1-800-424-9300

## Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number		% Wt or % vol	
Silver (Ag)	7440-22-4		98-100%	
<b>Trace Impurities:</b>				
Sodium	7440-23-5		.1-.05%	
Copper	7440-50-8		.1-.05%	
Zinc	7440-66-6		.1-.05%	
Nickel	7440-02-0		.1-.05%	
Lead	7439-92-1		.1-.05%	

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH IDLH
	TWA	STEL	TWA	STEL	TWA	STEL	
Silver (Ag)	0.01 mg/m <sup>3</sup>	N/A	0.1 mg/m <sup>3</sup> (metal)	N/A	N/A	N/A	N/A
			0.01 mg/m <sup>3</sup> (soluble cmpds, as Ag)				
Sodium	-----						
Copper	1 mg/m <sup>3</sup>						
Zinc	10 mg/m <sup>3</sup>						
Nickel	1 mg/m <sup>3</sup>						
Lead	.05 mg/m <sup>3</sup>						

## Section 3 - Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

<b>HMIS</b>
<b>H</b> 2
<b>F</b> 1
<b>R</b> 0
<b>PPE</b> <sup>†</sup>
<sup>†</sup> Sec. 8

### Potential Health Effects

**Primary Entry Routes:** Skin, eyes, inhalation, ingestion

**Target Organs:** Skin, eyes, respiratory system, digestive system, kidneys

**Acute Effects**

**Inhalation:** Harmful if inhaled. Inhalation of dusts or fumes may cause nose, throat and respiratory tract irritation or mild bronchitis. Excessive exposure may cause cosmetic discoloration, Argyria.

**Eye:** May cause irritation

**Skin:** May cause irritation. Symptoms may include redness or pain. The product may be absorbed through the skin.

**Ingestion:** Harmful if swallowed, may cause nausea, vomiting and pain.

**Carcinogenicity:** IARC, NTP, and OSHA do not list product or chemical name as a carcinogen.

**Medical Conditions Aggravated by Long-Term Exposure:** Argyria

**Chronic Effects:** May aggravate pre-existing skin, respiratory system, and digestive system.

## Section 4 - First Aid Measures

**Inhalation:** Remove to fresh air, seek medical attention.

**Eye Contact:** Wash thoroughly with water for 15 minutes. Do not wear contact lenses.

**Skin Contact:** Wash thoroughly with soap and water.

**Ingestion:** Dilute with water or milk. Induce vomiting on a conscious person. Seek medical attention

*After first aid, get appropriate in-plant, paramedic, or community medical support.*

**Note to Physicians:** None required.

**Special Precautions/Procedures:** None required

### Section 5 - Fire-Fighting Measures

**Flash Point:** N/A

**Flash Point Method:** Not flammable

**Burning Rate:** N/A

**Auto ignition Temperature:** N/A

**LEL:** N/A

**UEL:** N/A

**Flammability Classification:** May be combustible at high temperature

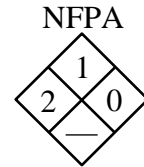
**Extinguishing Media:** Foam, carbon dioxide, dry chemical, water fog

**Unusual Fire or Explosion Hazards:** N/A

**Hazardous Combustion Products:** Some metallic oxides.

**Fire-Fighting Instructions:** Do not release runoff from fire control methods to sewers or waterways.

**Fire-Fighting Equipment:** Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full-face piece operated in pressure-demand or positive-pressure mode.



### Section 6 - Accidental Release Measures

**Spill /Leak Procedures:** If a spill/release in excess of EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (Ph: 1-800-424-8002)

DOT/CERLA Reportable Quantity (RQ): Silver (RQ 1000 lbs)

**Small Spills:** Eliminate all sources of ignition. Avoid generating dust. Wear proper protective apparel. Vacuum spill using a HEPA type vacuum.

**Large Spills:** Same as above

**Containment:** For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

**Cleanup:** Use HEPA type vacuum. Save material for reclamation.

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120).

### Section 7 - Handling and Storage

**Handling Precautions:** Wear proper protective equipment for dusty conditions. Avoid breathing dust or fumes. Avoid contact with eyes or skin. Keep away from excessive heat, sparks and flame. Avoid conditions that create dust.

**Storage Requirements:** Store in a cool dry well ventilated area away from heat, flame and incompatible materials.

**Regulatory Requirements:** N/A

### Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:** Use adequate ventilation to maintain air contaminants below exposure limits.

**Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PEL (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

**Administrative Controls:** N/A

**Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear an MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.

*Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

**Protective Clothing/Equipment:** Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

**Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

### Section 9 - Physical and Chemical Properties

<b>Physical State:</b> Solid	<b>Water Solubility:</b> Insoluble
<b>Appearance :</b> Grayish-white powder. <b>Odor:</b> NA	<b>Other Solubilities:</b> Strong acids
<b>Odor Threshold:</b> N/A	<b>Boiling Point:</b> 4014°F (2212°C)
<b>Vapor Pressure:</b> 0	<b>Freezing/Melting Point:</b> 1762°F (961°C)
<b>Vapor Density (Air=1):</b> N/A	<b>Viscosity:</b> N/A
<b>Molecular Weight:</b> 107.9	<b>Refractive Index:</b> N/A
<b>Density:</b> 10.49	<b>Surface Tension:</b> N/A
<b>Specific Gravity (H<sub>2</sub>O=1, at 4 °C):</b> 10.5	<b>% Volatile:</b> 0
<b>PH:</b> N/A	<b>Evaporation Rate:</b> N/A

### Section 10 - Stability and Reactivity

**Stability:** Product is stable at room temperature in closed containers under normal storage and handling conditions.  
**Polymerization:** Hazardous polymerization cannot occur.  
**Chemical Incompatibilities:** Acetylene, ammonia, strong acids, peroxides, organic acids.  
**Conditions to Avoid:** Avoid sources of heat and flame and incompatibles.  
**Hazardous Decomposition Products:** No thermal oxidative decomposition products known.

### Section 11- Toxicological Information

**Toxicity Data:** There is no available data for the product, only for the ingredients\*

**Eye Effects:** N/A

**Acute Inhalation Effects:**

Human, inhalation, TC<sub>LO</sub>: 0.1 mg/m<sup>3</sup>

**Skin Effects:** N/A

**Acute Oral Effects:**

Rat, oral, LD<sub>50</sub>: >5000 mg/kg

**Chronic Effects:** Argyria

**Carcinogenicity:** None of the ingredients listed are known to be carcinogenic.

**Mutagenicity:** None known

**Teratogenicity:** None known

\* See NIOSH, RTECS, for additional toxicity data.

### Section 12 - Ecological Information

**Ecotoxicity:** The ecological characteristics of this product have not been fully investigated. The product should not be discharged unmonitored into the environment.  
**Environmental Fate:** No data available.  
**Environmental Degradation:** No data available.  
**Soil Absorption/Mobility:** No data available.

### Section 13 - Disposal Considerations

**Disposal:** Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.  
**Disposal Regulatory Requirements:** Dispose of according to local, state and Federal regulations.  
**Container Cleaning and Disposal:** Vacuum material using a HEPA vacuum. Remove remainder of product with soap and water. Send for refining of precious metal.

### Section 14 - Transport Information

**DOT Transportation Data (49 CFR 172.101):** Not regulated for ground shipments within the United States.

**IATA/ICAO Information:** Not regulated for shipments by air, internationally.

**Shipping Name:** Silver

**Shipping Symbols:** Health 2

**Hazard Class:** Non-hazardous

**ID No.:** N/A

**Packing Group:** N/A

**Label:** N/A

**Special Provisions (172.102):**  
N/A

**Packaging Authorizations**

a) **Exceptions:** None required

b) **Non-bulk Packaging:** N/A

c) **Bulk Packaging:** N/A

**Quantity Limitations**

a) **Passenger, Aircraft, or Railcar:** None

b) **Cargo Aircraft Only:** None

**Vessel Stowage Requirements**

a) **Vessel Stowage:** None required

b) **Other:** N/A

### Section 15 - Regulatory Information

**EPA Regulations:**

TSCA: 8 (b), 8 (a), 8 (d) for silver

RCRA Hazardous Waste Number: Not listed (40 CFR 261.33)

RCRA Hazardous Waste Classification (40 CFR 261): If this product, as supplied, becomes a waste as defined under RCRA, Title 40 CFR 261, then it is the responsibility of the waste generator to determine the proper waste identification and disposal method.

CERCLA Hazardous Substance (40 CFR 302.4) listed specific per RCRA, Sec. 3001; CWA, Sec. 311 (b) (4); CWA, Sec. 307 (a), CAA, Sec. 112

CERCLA Reportable Quantity (RQ), 1000 lb (453.6 kg)

SARA 313 Codes: This product may be subject to the TSCA notification requirements because it contains silver, a toxic chemical constituent.

SARA Toxic Chemical (40 CFR 372.65): Silver, 1%

SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed, Threshold Planning Quantity (TPQ)

**OSHA Regulations:**

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Not listed

OSHA Specifically Regulated Substance (29CFR 1910.1200)

**State Regulations:** RTK for silver in RI, PA, MN, MA, NJ

**Other Regulations:**

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

EINECS: (Silver) This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

WHMIS (Canada):

Class D-1B: Material causing immediate and serious toxic effects (TOXIC).

Class D-28: Material causing other toxic effects (TOXIC).

DSCL (EEC): R41-Risk of serious damage to eyes.

### Section 16 - Other Information

**Prepared By:** Charles T. McCabe and Michael Herman

**Revision Notes:** N/A

**Additional Hazard Rating Systems:** N/A

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