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# Material Safety Data Sheet

[SPI #01705 Silver Wire, SPI #14159-AB, 14119-AB, 14123-AB, 14109-AB Silver Cathode, SPI #4130Z-CF Silver Grids, SPI #4140Z-CF Silver Grids](#)



## Section 01: Identification

Date Effective... June 12, 2006  
 (most recent revision)

Chemical Name/Synonyms... **Silver/Argentum**

Chemical Family..... **Metal**

### Emergencies


Use Only #'s:

Contacting CHEMTREC 24 Hour Emergency  
 Worldwide phone : 1-(703)-527-3887  
 Worldwide FAX : 1-(703)-741-6090  
 Toll-free phone : 1-(800)-424-9300 USA only

Product or Trade Name:  
 SPI Silver Wires for evaporation;  
 SPI Sputter Coater Silver Cathodes; SPI Silver Grids

CAS #..... 7440-22-4 EINECS/ELINCS #: 231-131-3

Chemical Formula..... Ag

<b>Hazardous Material Information System USA</b>	<b>Health</b>	<b>1</b>	<b>National Fire Protection Association USA</b>	
	<b>Fire Hazard</b>	<b>0</b>		
	<b>Reactivity</b>	<b>0</b>		
	<b>Personal Protection</b>			

NFPA

(National Fire Protection Association)

Rating (Scale 0-4) : (estimated)

Health 1

Flammability 0

Instability 0

## Section 02: Composition information on Ingredients

Component Name	CAS #	Percent	EINECS/ELINCS
Silver	7440-22-4	100	231-131-3

## Section 03: Hazards Identification

### Potential health effects (overview):

The material in either solid or alloy form is generally not considered hazardous. However, if the process involves grinding, melting, cutting, or any other process that causes a release of fumes, hazardous levels of airborne particulates could be generated.

**Eye:** May cause eye irritation

**Skin:** May cause skin irritation or discoloration

**Ingestion:** May cause irritation of the digestive tract. Effects may be cumulative.

**Inhalation:** May cause respiratory tract irritation. Inhalation of fumes may cause metal fume fever, which is characterized by flue-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count.

### Medical Conditions Aggravated by Exposure:

Individuals who may have had allergic reactions to metals or

sensitivity, may encounter skin rash or dermatitis, if skin contact with this product occurs. Persons with impaired pulmonary functions, may incur further impairment if dust or fumes are inhaled.

**Chronic:** Chronic inhalation or ingestion of silver salts may cause argyria characterized by a permanent blue-gray discoloration of the eyes, skin, mucous membranes and internal organs.

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## **Section 04: First Aid Measures**

### **First Aid for Eyes:**

Dust or powder should be flushed from the eyes with running water for 15 minutes. If irritation persists obtain medical assistance.

### **First Aid for Skin:**

Skin cuts and abrasions can be treated by standard first aid. Skin contamination with dust or powder can be removed with soap and water. If irritation persists obtain medical assistance.

### **First Aid for Inhalation:**

Breathing difficulty, caused by inhalation of dust or fume requires removal to fresh air. If breathing has stopped perform artificial respiration and seek medical assistance at once.

### **First Aid for Ingestion:**

Do not induce vomiting. If conscious and alert, rinse out mouth and drink 2-4 cupfuls of milk or water. Obtain medical assistance at once.

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## **Section 05: Fire Fighting Measures**

Flash Point..... Not Applicable

Autoignition Temperature..... Not Applicable

Flammable Limits in Air..... Flammable limit in air, % by vol.

LEL (Lower Explosive Limit) : Not Applicable

UEL (Upper Explosive Limit) : Not Applicable

### **Fire Extinguishing Media:**

This material is non-combustible. Use appropriate extinguishing agent for surrounding fires. Do not use water to extinguish fires around operations involving molten metal, due to the potential for a steam explosion.

### **Firefighting Procedure:**

Self-contained breathing apparatus should be worn when fighting

metal dust fires. High levels of dust or fine particles in the air may ignite or explode.

Fire and explosion hazards.

This is a stable material and will not burn or ignite. May decompose upon heating to produce corrosive and/or toxic fumes.

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## **Section 06: Accidental Release Measures**

### **Spill Response:**

Because of its high intrinsic value, and also because it is a non-renewable resource, this material should be reclaimed when possible.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container.

Clean up spills immediately. Avoid generating dusty conditions. Provide ventilation; wear proper personal protective equipment.

### **Disposal considerations:**

Because of its high intrinsic value, and also because it is a non-renewable resource, this material should be reclaimed when possible. When reclaiming is not feasible and disposal the only alternative, then it should be done in accordance with all applicable federal, state, and local regulations.

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## **Section 07: Handling and Storage**

In solid form this material poses no special problems. Store metal in a dry area. Do not store adjacent to acids. Wash hands thoroughly after using. Wash hands before eating. Avoid contact with eyes, skin and clothing. Avoid inhalation and ingestion.

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## **Section 08: Exposure Controls and Personal Protection**

### **Eye Protection Requirements:**

Safety glasses are recommended.

### **Skin Protection Requirements:**

Protective gloves are recommended, to prevent skin exposure.

### **Respiratory Protection:**

Use an appropriate NIOSH approved respirator if airborne dust concentrations exceed the PEL or TLV.

### **Other protective equipment:**

Eye wash fountain should be readily available in areas of use of handling.

**Exposure Limits:**

Chemical Name	ACGIH	NIOSH	OSHA-Final PELs
Silver (dust)	0.01 mg/m3 TWA (dust)	0.01 mg/m3 TWA	10 mg/m3 IDHL

**OSHA**

**Ventilation Requirements:**

Local exhaust: Recommended, when cutting, grinding, or melting or any other operation where dust or fumes are created.

**General:**

Recommended

**Environmental Surveillance:**

If the operation generates dust or fumes, exposure to airborne materials should be determined by having air samples taken in the employee breathing zone and work area.

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**Section 09: Physical and Chemical Properties**

Physical State.....	Solid
Appearance.....	Silvery white
Odor.....	None reported
Vapor Pressure.....	100 mm Hg at 1865°C
Vapor density.....	Not applicable
Evaporation Rate.....	Not applicable
Boiling Point.....	2212°C
Coeff. of Water/Oil Dist.	Not Applicable
pH (Liquids Only).....	Not Applicable
% Volatile By Volume.....	Essentially zero
Melting Point.....	961°C
Solubility In Water.....	Insoluble
Specific Gravity.....	(H2O = 1): 10.5

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**Section 10 Stability and Reactivity**

**Stable:** Yes

**Hazardous Polymerization:**

Does not occur.

Hazardous Decomposition Products: Irritating and toxic fumes and gases, silver fumes under fire conditions

**Conditions to avoid:**

Conditions that could create dust or fumes

Exposure to Strong Acids, Strong Bases, Ethylenediamine

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## Section 11: Toxicological Information

No hazardous ingredients in this material.

**RTECS#:** VW3500000

**LD<sub>50</sub>/LC<sub>50</sub> Information:** Not available

**Carcinogenicity:**

Not listed by ACGIH, IARC, NTP, or CA Prop 65

**IARC:** Group 4

**Teratogenicity:**

Not available

**Reproductive Effects:**

Not available

**Neurotoxicity:**

Not available

**Mutagenicity:**

Not available

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## Section 12: Ecological Information

**Environmental:** When used and/or disposed of as indicated, no adverse environmental effects are foreseen.

**Mobility:** Non-volatile/Insoluble in water.

**Degradability:** Not biodegradeable

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## Section 13: Disposal Considerations

Product and packaging must be disposed of in accordance with local and national regulations. Because it is a non-renewable resource and has economic value, waste material is usually a candidate for recycling. Unused product may be returned for reclamation provided it has been purchased from SPI Supplies. Contact SPI Supplies sending information about lot number and approximate time of purchase. This material is NOT classified as a hazardous material by RCRA. Use only licensed transporters and permitted disposal facilities and conform to all laws.

**RCRA P-Series:** none listed  
**RCRA U-Series:** none listed

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## **Section 14: Transport Information**

DOT Shipping Name: Not regulated  
DOT Hazard Class: None  
Product RQ: None  
Technical Shipping Name: Metal alloy  
UN or NA number: None

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## **Section 15: Regulatory Information**

OSHA Status: N/A  
TSCA Status: These products are pure silver metal.  
RCRA Status: N/A  
SARA Title III: No hazardous substances.  
RTECS #: VW3500000

European/International Regulations:  
European Labeling in Accordance with EC Directives

Hazard Symbols:  
Risk Phrases:  
R

Safety Phrases:  
S

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## **Section 16: Additional Information**

### **Disclaimer of Liability:**

Caution! Do not use SPI Supplies products or materials in applications involving implantation within the body; direct or indirect contact with the blood pathway; contact with bone, tissue, tissue fluid, or blood; or prolonged contact with mucous membranes. Products offered by SPI Supplies are not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. SPI Supplies will not provide to customers making devices for such applications any notice, certification, or information necessary for such medical device use required by US FDA (Food and Drug Administration) regulation or any other statute. SPI Supplies and Structure Probe, Inc. make no representation, promise, express warranty or implied

warranty concerning the suitability of these materials for use in implantation in the human body or in contact with internal body tissues of fluids.

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Friday October 27, 2006

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