

SPI Supplies Division

Structure Probe, Inc.

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Manufacturer's CAGE: 1P573

Safety Data Sheet

Date Effective: October 20, 2017

SPI Catalog # 04960-AB

Silver Conductive Paint, no VOC

Section 1.1: Identification

Chemical Name/Synonyms Silver Conductive Paint

Product or Trade Name

CAS #'s 7440-22-4; 9004-64-2; 7732-18-5

Chemical Formula..... mixture

Section 1.2: Relevant Uses/Restrictions

Use Silver Conductive Paint for affixing samples to specimen mounts, or for attaching specimens in the microprobe and tilting stages of transmission electron microscopes (TEMs).

Section 1.3: Supplier of the Safety Data Sheet

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Section 1.4: Emergency telephone number

Emergencies

Contacting CHEMTREC:

24 Hour Emergency Use Only #'s...

Worldwide phone: 1-(703)-741-5970

Toll-free phone: 1-(800)-424-9300 USA + Canada only

Section 2: Hazard Identification

2.1 Classification of the substance

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Not a hazardous substance or mixture.

2.2 Label elements

GHS Label elements, including Precautionary Statements:

Not a hazardous substance or mixture.

Hazards not otherwise classified (HNOC) or not covered by GHS:

None

2.3 Other Hazards:

Hazardous Material Information System USA

Health 0
Fire Hazard 0
Reactivity 0
Personal Protection

NFPA Rating (estimated)

Health 0
Flammability 0
Reactivity 0

Section 3: Composition

3.1 Substances: Not applicable.

3.2 Mixtures:

<u>Name</u>	<u>CAS Number</u>	<u>Percentage</u>
Silver	7440-22-4	40 – 50 %
Hydroxypropyl cellulose	9004-64-2	5 – 15 %
Water	7732-18-5	40 – 50 %

Section 4: First Aid Measures

4.1 Description of first aid measures:

General advice:

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Inhalation:

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

Skin Contact:

Wash off with soap and plenty of water. Consult a physician.

Eye Contact:

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Ingestion:

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed:

The most important known symptoms and effects are described in the labeling (See Section 2) and/or in Section 11.

4.3 Indication of any immediate medical attention and special treatment needed:

No data available.

Section 5: Fire Fighting Measures

5.1 Extinguishing media:

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture:

Silver/Silver oxides, carbon oxides.

5.3 Advice for firefighters:

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information:

Use water spray to cool unopened containers.

Section 6: Accidental Release Measures

6.1 Personal precautions:

Avoid dust formation.
Avoid breathing vapors, mist, or gas.
Ensure adequate ventilation.
For personal protection, see Section 8.

6.2 Environmental precautions:

Prevent further leakage or spillage, if safe to do so.
Do not let product enter drains.
Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up:

Soak up with inert material and dispose of as hazardous waste.
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections:

For disposal see Section 13.

Section 7: Handling and Storage

7.1 Precautions for safe handling:

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see Section 2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Air sensitive.
Handle and store under inert gas.
Keep in a dry place.

Storage class (TRGS 510): Non Combustible Solids

Specific end uses:

7.3 Specific end uses:

Use Silver Conductive Paint for affixing samples to specimen mounts, or for attaching specimens in the microprobe and tilting stages of transmission electron microscopes (TEMs).

This material is not being offered for clinical or diagnostic applications, agricultural uses or for human or animal consumption.

Section 8: Exposure Controls and Personal Protection

8.1 Control parameter and Personal Protection

Workplace exposure limits:

Component	CAS Number	Value	Control parameters	Basis
Silver	7440-22-4	TWA	0.01 mg/m ³	USA, OEL, OSHA Table Z-1, Limits for Air Contaminants
Remarks		TWA	0.1 mg/m ³ argyria	USA, ACGIH (TLV)
		TWA	0.01 mg/m ³	USA, NIOSH Recommended exposure limits
		PEL	0.01 mg/m ³	California permissible exposure limits for Chemical contaminants (Title 8, article 107)

OEL = Occupational Exposure Limit

Biological limit values: No further relevant information available.

8.2 Exposure controls

8.2.1 Appropriate engineering controls:

Handle in accordance with good industrial hygiene and safety practice.

Wash hands before breaks and at the end of the workday.

8.2.2 Individual protection measures

Eye face protection:

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Recommended material: Nitrile rubber, minimum thickness 0.11 mm, Break through time: 480 min. If used in solution, or mixed with other substances, and under conditions which differ from EN374, contact the supplier of CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection:

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Respiratory protection:

Respiratory protection is not required. Where protection from nuisance levels of dust are desired, use type N95 (US) or type P1 (EN 143) dust masks. Where risk assessment shows air-purifying respirators are appropriate, use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

8.2.3 Environmental exposure controls:

Prevent further leakage or spillage if safe to do so.
Do not let product enter drains.
Discharge into the environment must be avoided.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Physical state: Liquid

Color: Silver

Odor: Mild odor

Odor threshold: No data available

pH: No data available

Melting point/Freezing point: 100 °C (212 °F)

Boiling point/Boiling point range: No data available

Flash Point: No data available

Evaporation rate: No data available

Flammability (solid, gas): No data available

Upper/lower flammability or explosive limits: No data available

Vapor Pressure: No data available

Vapor density: No data available

Relative density: No data available

Solubility: No data available

Partition coefficient (n-octanol/water): No data available

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Viscosity: No data available

Explosive properties: No data available

Oxidizing Properties: No data available

9.2 Other information: No data available

Section 10: Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Chemical Stability: Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions: No data available.

10.4 Conditions to avoid: No data available.

10.5 Incompatible materials: Oxygen, Strong acids, Strong bases, and Strong oxidizing agents.

10.6 Hazardous decomposition products:

Hazardous decomposition products formed under fire conditions: Silver/silver oxides.

Other decomposition products: No data available

In the event of fire – See Section 5.

Section 11: Toxicological Information

Information on the likely routes of exposure

11.1 Information on toxicological effects

A. Acute toxicity

Ingredient	Result	Species	Dose	Exposure
Silver	LD50 Oral	Rat – male	>5,000 mg/kg	-
Hydroxypropyl cellulose	LD50 Oral	Rat	10,200 mg/kg	-

Conclusion/Summary: Not available

Chronic Toxicity: Conclusion/Summary: Not available

B. Skin corrosion/irritation

No data available.

C. Serious eye damage/irritation

No data available.

D. Respiratory or skin sensitization

No data available.

E. Germ cell mutagenicity

No data available.

F. Carcinogenicity

Classification not possible from current data (Silver).

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

G. Reproductive toxicity

No data available.

H. STOT-single exposure

No data available.

I..STOT-repeated exposure

No data available.

J. Aspiration hazard

No data available

Additional information: May cause argyria (a slate-gray or bluish discoloration of the skin and deep tissue 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.

Section 12: Ecological Information**12.1 Toxicity**

No data available.

12.2 Persistence and degradability

No data available.

12.3 Bio-accumulative potential

No data available.

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

PBT/vPvP assessment not available as chemical safety assessment not required/ not conducted.

12.6 Other adverse effects

No data available.

Section 13: Disposal Considerations**13.1 Waste treatment methods**

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. The generation of waste should be avoided or minimized whenever possible. Disposal of this product, solutions, and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14: Transport Information

Not regulated for transport of dangerous goods: DOT, IMDG, IATA.

DOT (US): Not dangerous goods.

IATA: Not dangerous goods.

IMDG: Not dangerous goods.

Section 15: Regulatory Information

15.1 Safety, health and environmental regulations/ legislation specific for the substance or mixture

SARA 302 Components:

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components:

The following components are subject to reporting levels established by SARA Title III, Section 313:

Silver – CAS Number 7440-22-4

SARA 311/312 Hazards:

No SARA Hazards

Massachusetts Right To Know Components:

Silver – CAS Number 7440-22-4

Pennsylvania Right To Know Components:

Silver – CAS Number 7440-22-4

Cellulose, 2-hydroxypropyl ether – CAS Number 9004-64-2

Water – CAS Number 7732-18-5

New Jersey Right To Know Components:

Silver – CAS Number 7440-22-4

Cellulose, 2-hydroxypropyl ether – CAS Number 9004-64-2

Water – CAS Number 7732-18-5

California Prop. 65 Components:

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

15.2 Chemical Safety Assessment – has not been carried out.

Date of Preparation: 20 October 2017.

Abbreviations and acronyms

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

CMRG: Chemical Manufacturer's Recommended Guidelines

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

AIHA: American Industrial Hygiene Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
OEL: Occupational Exposure Limit
PBT: Persistent, Bio-accumulative and Toxicological
vPvB: very Persistent and very Bio-accumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
STEL: Short Term Exposure Limit
CEIL: Ceiling

Section 16: Other 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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