

SPI Supplies Division

Structure Probe, Inc.

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Manufacturer's CAGE: 1P573

Safety Data Sheet

Date Effective: March 15, 2016

SPI #05001-AB/05002-AB/05002-GA Silver Paint, SPI
#05005-AB Silver Streaker™

Section 1: Identification

Chemical Name/Synonyms..... Silver Paint

Chemical family..... Mixture of solvents, resins
and silver metal particles

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

Product or Trade Name..... Silver conductive paint

CAS #'s..... 7740-22-4; 108-65-6; 123-86-4; resin mixture

Chemical Formula..... mixture

HAZARDS IDENTIFICATION

Classification of the substance:

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

Emergency Overview

OSHA Hazards

Flammable liquid, Target Organ Effect, Irritant

Target Organs

Liver, Kidney, Central Nervous System

GHS Classification

Flammable liquids (Category 3)

Acute toxicity, Inhalation (Category 3)

Skin irritation (Category 2)

Eye irritation (Category 2A)

Specific target organ toxicity - single exposure (Category 3)

Acute aquatic toxicity (Category 3)

GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)

- H226 Flammable liquid and vapor.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H331 Toxic if inhaled.
- H336 May cause drowsiness or dizziness.
- H402 Harmful to aquatic life.

Precautionary statement(s)

- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Hazardous Material Information System USA

- Health..... 2
- Fire Hazard..... 3
- Reactivity.....1
- Personal Protection..... B

NFPA Rating (estimated)

- Health..... 2
- Flammability..... 3
- Reactivity..... 1

Section 2: Composition

CAS #.....	Chemical Name	Weight%	EC#
7440-22-4	Silver (metallic)	35-65	231-131-3
108-65-6	1-methoxy-2-propanol acetate	10-30	203-603-9
123-86-4	Butyl acetate	10-30	204-658-1
mixture	Acrylic resin	5-10%	Not found
Chemical Formula.....	Proprietary mixture		

Section 3: Hazard Identification

Emergency overview:

Appearance: Gray Paste

Flash Point: 76 °F (TCC), Butyl Acetate – Lowest Flashing component

Warning!

Flammable; Eye or Skin Irritant

Target Organs: Liver, Kidneys, Central Nervous System

Potential Health Effects

Eye: Irritating to the eyes. May cause tearing, redness, swelling or temporary corneal damage.

Skin: Irritating to the skin. Prolonged contact may cause dermatitis.

Ingestion: May cause headache, drowsiness and unconsciousness.

Inhalation: May cause irritation to the respiratory tract and to other mucous

Section 4: First Aid Measures

Eyes: Immediately flush with copious amounts of water for at least 15 minutes. Seek medical attention if discomfort persists.

Skin: Remove contaminated clothing and wash skin with soap and water. If irritation persists, seek medical attention.

Ingestion: Give two or more glasses of water immediately. Do NOT induce vomiting. Seek immediate medical attention.

Inhalation: Remove to fresh air. If breathing is difficult, give oxygen and seek immediate medical attention.

Section 5: Fire Fighting Measures

Flash Point..... 76°F

Explosive Limits (%V in air):

LEL: 1.5

UEL: 10.0

Fire Extinguishing Media:

Dry Chemical, CO₂, water foam, "alcohol" foam, water spray to cool fire-exposed containers and disperse vapor.

Firefighting Procedure:

Toxic decomposition products may form under fire conditions. Wear full protective clothing and a full face piece, positive pressure, self contained breathing apparatus (SCBA).

Fire and explosion hazards:

Easily ignited material which burns with intense heat.

Keep away from sparks and open flames. Do not smoke in area with open product. The solvent vapors are heavier than air and may travel along the floor to a source of ignition and flashback. Use the product in areas and equipment with appropriate National Electrical Code (NEC) classification. Consider the need for spark proof tools. If the product could be heated above its flashpoint during processing or use, remove all sources of ignition, such as sparks, flames, or static discharge to prevent vapor ignition. Be sure also to decontaminate contaminated clothing and equipment with soap and water. Dispose of residues per federal, state, and local regulations.

Closed containers may explode from increased vapor pressure when exposed to extreme heat. Cool overheated closed containers with water spray, but do not spread the fire with cooling water.

Section 6: Accidental Release Measures

Spill Response: Evacuate the area of all unnecessary personnel.

Action to take for spills:

For small spills: Absorb on to rags, sand, or other absorbent material.

For large spills: Get workers out of the affected area. If flammable liquids or vapors may be present, turn off electrical devices or other sources of sparks or flames. Wear protective equipment. Use supplied-air respiratory protection if vapor concentrations are not known. Contain spill at source by diking or absorbing with sand. Do not allow spill to spread to or intentionally flush to sewer or ground. Wash area thoroughly. Adequately ventilate area. Spill residue, cleaning rags, and absorbent may be refined to recover the precious metal content.

Disposal considerations:

Components of this product may be considered hazardous, waste product may be refined to recover previous metal content.

Section 7: Handling and Storage

Handling:

Adequate local ventilation should be used to keep exposures below applicable limits. Other engineering controls such as totally enclosed handling systems are also preferred; respiratory protection will be needed if exposures can not be kept below applicable limits by other means.

Respiratory protection:

Selection of a suitable respirator will depend on the properties of the contaminant (s) and their actual or expected air concentration vs. applicable limits. Consult ANSI Standard Z988.2 for decision logic to select appropriate NIOSH/MESA approved respirators. If respirators are needed to meet applicable limits, a respiratory protection program up to the level of OSHA Standard 29 CFR 1910.134 is mandatory. This includes air monitoring, selection, medical approval, training, fit

testing, inspection, maintenance, cleaning, storage, etc.

Gloves:

Should be used when the possibility of skin contact exists. Impervious gloves (rubber or neoprene) should be used to avoid direct skin contact.

Eye Protection:

Chemical splash goggles.

Protective Clothing:

Protective clothing suitable to prevent skin contact should be used.

Smoking and eating:

Do not smoke, consume or store food or drinks in areas where the product is handled or stored. After handling the product, wash hands thoroughly before leaving the work area.

Additional engineering controls, work practices and training may be required depending on exposure levels. These are discussed in the OSHA respiratory protection standard (290 CFR 1910.134) and OSHA Hazard Communications Standard(29 CFR 1910.120).

Contaminated items:

Empty product containers, contaminated clothing and cleaning materials, etc. should be considered hazardous until decontaminated or properly disposed according to federal, state and local laws and regulations.

Section 8: Exposure Controls and Personal Protection

Engineering Controls:

An eyewash station and emergency shower must be available to the work station.

Exposure Limits:

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs	
Silver(metallic)	0.1 mg/m3	0.01 mg/m3	TWA	0.01 mg/m3 TWA
				10 mg/m3 IDHL
Propylene Glycol Methyl Ethyl Acetate		N/A	N/A	N/A
Butyl Acetate		150 ppm	150 ppm TWA	150 ppm TWA
		200 ppm STEL	170 mg/m3 TWA	710 mg/m3 TWA
		1700 ppm IDHL		

OSHA Vacated PELs: n-Butyl Acetate: 150 ppm TWA; 710 mg/m3 TWA

Personal Protective Equipment

Eyes: Chemical splash goggles

Skin: Impervious gloves (rubber, neoprene) to prevent skin contact

Clothing: Protective clothing suitable to prevent skin contact.

Respirators:

Selection of a suitable respirator will depend on the properties of the contaminant (s) and their actual or expected air concentration vs. applicable limits. Consult ANSI Standard Z988.2 for decision logic to select appropriate NIOSH/MESA approved respirators. If respirators are needed to meet applicable limits, a respiratory protection program up to the level of OSHA Standard 29 CFR 1910.134 is mandatory. This includes air monitoring, selection, medical approval, training, fit testing, inspection, maintenance, cleaning, storage, etc.

Section 9: Physical and Chemical Properties

Section 09 Physical and Chemical Properties

Boiling Point..... 259-284 ° F
Formula Weight..... Not available
Coeff. of Water/Oil Dist. Not available
pH (Liquids Only)..... Not available
% Volatile By Volume..... 30-40%
Melting Point..... Not available
Vapor Pressure..... 6mm @ 20 ° C
Vapor Density/Air is 1... Heavier than air
Solubility In Water Appreciable >10%
Appearance and Color..... Gray paste
Specific Gravity (H2O = 1) 1.8 – 2.0
Evaporation Rate (n-butyl acetate = 1): Slower
Odor..... Mild "fruity" smell
Flash Point: 76° F
Explosive Limits: (TAG)
 Lower: 1.5
 Upper: 10.0

Section 10: Stability and Reactivity

Stable: Yes Hazardous Polymerization:
This product does not normally polymerize significantly.

Hazardous Decomposition Products:
At high temperature may include CO_x (carbon dioxide / carbon monoxide), water, nitrogen oxides, ethyl methacrylate, methyl acrylate

Conditions to avoid:
Heat, Contact with ignition source Materials to avoid: Oxidizing agents, acids, potassium tert-butoxide, reducing agents

Instability:
This product is normally stable.

Section 11: Toxicological Information

1-Methoxy-2-propanol acetate

Toxic effects described in animals include:

By skin or eye contact:

Mild skin irritation; eye irritation.

Toxic effects of repeated or prolonged animal exposures include, by skin or eye contact: Skin effects

By inhalation:

Respiratory effects: Degeneration of the olfactory epithelium; renal effects; non-specific effects, e.g. weight loss and irritation; liver effects.

Additional animal tests have shown: No genetic damage in bacterial or mammalian cell cultures; no developmental toxicity.

Human health effects of over exposure may include:

By skin or eye contact:

Skin irritation with discomfort or rash

Eye irritation with discomfort, tearing or blurring of vision

By inhalation:

Nonspecific discomfort, e. g. nausea, headache, or weakness

Human effects of higher level acute, repeated, or chronic overexposure may include:

Irritation to the upper respiratory passages with coughing and discomfort.

In addition, animal tests indicate commercial grade 1-methoxy-2-propanol acetone does not cause developmental toxicity. However, the tests of pure 2-methoxy-1-propanol acetate in rabbits and rats by inhalation have shown developmental toxicity. 2-methoxy-propanol acetate did not show developmental toxicity by skin contact. 2-methoxy-1-propanol acetate did not show developmental toxicity by skin contact. 2-methoxy-1-propanol acetate is present in commercial grade 1-methoxy-2-propanol acetate in low concentrations.

Butyl acetate

Toxic effects described in animals include:

By skin or eye contact:

Skin Irritation; eye irritation

By inhalation: Eye irritation, narcosis; upper respiratory irritation

By ingestion:

Narcosis Toxic effects of repeated or prolonged animal exposures include:

By inhalation: Eye irritation; lower weight gain

By ingestion: Liver effects

Toxic effects of chronic animal tests include:

By inhalation: Liver effects

Additional animal tests have shows: Developmental toxicity at dosage levels showing maternal toxicity ; no genetic damage in animals, bacterial, or mammalian cell cultures.

Human health effects of overexposure may include:

By skin or eye contact: Skin irritation with discomfort, tearing, or blurring of vision

By inhalation: Irritation of the upper respiratory passages with coughing and discomfort; nonspecific discomfort, e. g. nausea, headache or weakness.

Human effects of higher level acute repeated or chronic overexposure may include:

Temporary nervous system depression with anesthetic effect, e. g. dizziness, headache, confusion, loss of coordination, loss of consciousness.

Abnormal liver function as detected by laboratory tests.

In addition: By skin or eye contact: Significant skin permeation appears unlikely; there are inconclusive or unverified reports of human sensitization.

Silver, metallic:

Human effects of higher level acute, repeated or chronic overexposure may include argyria.

Acrylic resin:

Toxic effects described in animals include:

Slight skin irritation

Human health effects of overexposure may include:

Allergic skin rashes

Eye irritation with discomfort, tearing, or blurring of vision

Nonspecific discomfort, e. g. nausea, headache, weakness.

Section 12: Ecological Information

Exotoxicity:

CAS# 7440-22-4: No data available.

CAS# 108-65-6:

LC50	Salmo gairdneri	100-180 mg/l	96h	OECD Test Guideline 203
EC50	Daphnia magna	>500 mg/l	48h	Annex V, Directive37-548/EEC

CAS# 123-86-4:

LC50	Lepomis macrochirus	100 mg/l	96h
EC50	Daphnia magna	72.8-205.0 mg/l	24h

Environmental Fate:

CAS# 7440-22-4: Use of manganese dioxide or precipitation with halides are the dominant controls for reducing the concentration of dissolved silver in aquatic environments, resulting in higher concentrations of silver in the bed sediments than in the waters above the sediments.

CAS# 108-65-6: Biotic/Aerobic; 100% Readily biodegradable

CAS# 123-86-4: No data available.

Physical:

CAS# 7440-22-4: May be accumulated by Flathead minnow, daphnia and algae, but no food chain magnification has been noted.

CAS# 108-65-6: No data available.

CAS# 123-86-4: No data available.

Other:

CAS# 108-65-6:

Biochemical Oxygen Demand (BOD): 0.36 mg/l

Chemical Oxygen Demand (COD): 1.174 mg/g

Section 13: Disposal Considerations

Use only licensed transporters and permitted disposal facilities and conform to all laws.

Recycle to process, if possible. Silver is a non-renewable resource.

Care must be taken to prevent environmental contamination from the use of this material. The user of this material has the responsibility to dispose of unused materials, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

RCRA P-Series: None listed

RCRA U-Series: None listed

Section 14: Transport Information

Shipping information:

Shipping name: Paint Related Material

Hazard Class: 3

UN/NA Class: UN1263

Label: Flammable liquid

Packing Group III

Section 15: Regulatory Information

United States:

This MSDS has been prepared to be in compliance with OSHA regulations and with the Pennsylvania Right-to-know regulations. Section 2 lists the chemical name and CAS# for each:

Specially hazardous ingredient	>0.01% (OSHA is .0.1%)
Hazardous ingredient	>1.0 % (OSHA is the same)
Non-hazardous ingredient	>3.0% (OSHA does not regulate)

RTECS:

CAS# 1440-22-4: VW3500000

CAS# 108-65-6: AI8925000

CAS# 123-86-4: AF7350000

TSCA

All ingredients in this product appear on the TSCA Inventory.

Health & Safety Reporting List

Chemical Test Rules:

CAS# 123-86-4: CFR 799.5000

Section 12b: None listed

TSCA Significant New Use Rule:

CERCLA Section 103:

CAS# 123-86-4 >5000 lbs RQ

SARA:

Hazard Classification: Fire Hazard

SARA Codes:

CAS# 123-86-4: acute, flammable

Section 313:

CAS# 7440-22-4: Wt% 35-65%

Clean Air Act:

None listed

Clean Water Act:

None listed

OSHA:

State (Individual states in the USA)

CAS# 123-86-4 is found on the following state Right-to-Know lists: California, Massachusetts, Minnesota, New Jersey, Pennsylvania

California No Significant Risk Level:

California Prop. 65:

None listed

European/International Regulations:

European Labeling in Accordance with EC Directives

Hazard Symbols: Xi

Risk Phrases:

R10	Flammable
R33	Danger of cumulative effects
R36	Irritating to eyes
R66	Repeated exposure may cause skin dryness or cracking
R67	Vapors may cause drowsiness and dizziness

Safety Phrases:

S28A	After contact with skin, wash immediately with plenty of water
S25	Avoid contact with eyes
S37	Wear suitable gloves
S45	In case of accident or if you feel unwell, seek medical advice immediately (show label

where possible

WGK (Water Danger/Protection):

CAS# 7440-22-4: 0

CAS# 108-65-6: 1

CAS# 123-86-4: 1

Canada

DSL/NDSL:

CAS# 7440-22-4 is listed on the DSL List.

CAS# 108-65-6 is listed on the DSL List

CAS# 123-86-4 is listed on the DSL List

This product has a WHMIS classification of B2, D2B

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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