



**SPI Supplies Division**  
**Structure Probe, Inc.**  
P.O. Box 656 West Chester, PA 19381-0656 USA  
**Phone:** 1-(610)-436-5400 **Fax:** 1-(610)-436-5755  
**E-mail:** [spi3spi@2spi.com](mailto:spi3spi@2spi.com)  
**WWW:** <http://www.2spi.com>  
**Manufacturer's CAGE:** 1P573

# Material Safety Data Sheet

[SPI #05001-AB/05002-AB/05002-GA](#)  
[Silver Paint](#), [SPI #05005-AB Silver](#)  
[Streaker™](#), and [SPI #05008-AB Silver](#)  
[Kwik-Stik™](#)



## Section 01 Identification

Date Effective... June 14, 2006  
(most recent revision)

Chemical Name..... Silver paint

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

### 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 #05001 and #05002 SPI Silver Paint;  
#05005-AB Silver Streaker;  
#05008-AB Silver Quick-Stik

CAS #.....	Chemical Name	V.P. mm Hg@20C	Weight%
108-65-6	1-methoxy-2-propanol acetate	3.7	10-30
112-07-2	Ethylene glycol monobutyl ether acetate	< 1.0	0.1-1%
123-86-4	Butyl acetate	1.0	10-30
7440-22-4	Silver (metallic)	n/a	> 60
Not known	Fatty acid derivative	n/a	1-5%
65859-05-4	Acrylic resin	n/a	5-10%
80-62-6	Methyl methacrylate		< 0.1%
108-88-3	Toluene	27	< 0.1

Chemical Formula..... Proprietary mixture

NFPA (National Fire Protection Association) Rating (Scale 0-4) :

Not available

### Section 02 Physical Data

Boiling Point.....	Not available
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.....	Not available
Vapor Density/Air is 1...	Not available
Solubility In Water.....	Slight
Appearance and Color.....	Gray paste
Specific Gravity.....	(H <sub>2</sub> O = 1): Not known
Evaporation Rate.....	(n-butyl acetate = 1): Not available
Odor.....	Mild "fruity" smell

### Section 03 Fire And Explosion Hazard Data

Flash Point..... 32.2°C (90°F) (SETA)

Fire Extinguishing Media:

Dry Chemical, CO<sub>2</sub>, "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 facepiece, positive pressure, self contained breathing apparatus (SCBA).

Fire and explosion hazards:

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.

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## Section 04 Reactivity Data

Stable: Yes

Hazardous Polymerization:

This product does not normally polymerize significantly.

Hazardous Decomposition Products:

At high temperature may include CO<sub>x</sub> (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.

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## Section 05 Spill, Leak and Disposal Procedures

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.

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## **Section 06 Health Hazard Data**

### **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 include:

By inhalation:

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 anaesthetic 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.

### **Dibutyl phthalate**

Toxic effects described in animals include:

By skin or eye contact:

Skin irritation  
Eye irritation  
No skin sensitization

By inhalation:

Eye irritation  
Nonspecific effects, e.g. weight loss and irritation  
Irritation of mucousal surfaces  
Blood effects

By ingestion:

Conjunctivitis, lack of coordination, respiratory effects, gastrointestinal effects.

Toxic effects of repeated or prolonged animal exposures include:

By skin or eye contact:

Dermatitis, weight loss, testicular effects, kidney effects

By inhalation:

Liver effects, lung effects

By ingestion:

Reduced growth rate, testicular effects, stomach effects, kidney effects, liver effects

Toxic effects of chronic animal tests include:

By inhalation:

Weight loss, body chemistry effects, long effects, brain effects

Additional animal effects have shown:

No carcinogenic activity, no genetic damage in mammalian cell cultures, developmental toxicity at dosage levels showing maternal toxicity, genetic damage in bacterial cell cultures.

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:

Irritation of the upper respiratory passages with coughing  
and discomfort

By ingestion:

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

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

Temporary nervous system depression with anaesthetic effects, e. g.  
dizziness, headache, confusion, lack of coordination and loss of  
consciousness, abnormal kidney function as detected by laboratory  
tests, and abnormal liver function as detected by laboratory tests.

#### **Amine compound**

Toxic effects described in humans include:

By skin or eye contact:

Corrosive to the skin, skin sensitization, severe eye irritation  
Toxic effects of repeated or prolonged animal exposures

include:

By ingestion:

Weight loss, kidney effects, liver effects  
Toxic effects of chronic animal tests include:

By ingestion:

Pulmonary fibrosis, pneumonia, additional animal tests have  
shown no genetic damage in animals, developmental toxicity at  
dosage levels showing maternal toxicity, genetic damage in  
bacterial cell cultures; no carcinogenic activity based on  
a skin painting study.

Human health effects of overexposure may include:

By skin or eye contact:

Allergic skin rashes, skin burns, or ulceration;  
Eye corrosion with corneal or conjunctival ulceration  
Infrequently associated with skin sensitization in humans

By inhalation:

Irritation of the upper respiratory passages with coughing  
and discomfort

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

By inhalation:

Asthma-like reactions with shortness of breath, wheezing

or cough, and possibly occurring on subsequent re-exposure to concentrations below established exposure limits

Abnormal kidney function as detected by laboratory tests

Abnormal liver function as detected by laboratory tests

By eye and skin contact

Skin permeation can occur in amounts capable of producing effects of systemic toxicity

By inhalation:

Respiratory sensitization has never been reported with this Compound. However respiratory sensitization has been reported from other compounds in this class.

#### **Silver metallic**

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

#### **Fatty acid derivative**

#### **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  
Irritation of the upper respiratory passages, dizziness

#### **Methyl methacrylate**

Toxic effects described in animals include:  
By skin or eye contact:  
Skin irritation, skin sensitization, moderate eye irritation

By inhalation:  
Nervous system effects, upper respiratory irritation,  
lung effects, urinary tract effects, liver effects

Toxic effects of repeated or prolonged animal exposures include:

By inhalation:  
Respiratory tract irritation, nasal effects, eye irritation,  
pulmonary effects, lack of coordination, lung effects, liver effects

By ingestion:  
Skin effects, central nervous system effects, liver effects,  
kidney effects

Toxic effects of chronic animal tests include:



By irritation:  
Nasal effects

By ingestion:  
Weight loss, kidney effects

Additional animal tests have shown:

Developmental toxicity at dosage levels showing maternal toxicity  
No inheritable genetic damage in animals

Genetic damage in mammalian cell cultures

No carcinogenic activity

Human health effects of overexposure may include:

By skin or eye contact:  
Skin irritation with discomfort or rash

Allergic skin rashes

Severe eye irritation with corneal or conjunctival ulceration

By inhalation:  
Temporary elevation of blood pressure

Temporary sensory nervous system effects (e.g. burning or numbness)

Irritation of the upper respiratory passages

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

Temporary lung irritation effects with cough, discomfort, difficult breathing or shortness of breath; abnormal kidney function as detected by laboratory tests. In addition, in one study, excess colon and rectal cancer was observed in a group of workers employed between 1933-1945 in operations that entailed prolonged, extremely high exposures to the vapor phase of ethyl acrylate methyl methacrylate monomers, and to volatile by-products of the ethyl acrylate/methyl methacrylate polymerization process. In a follow up study, and in an additional study on workers employed in the same types of operations, but after 1945 and at different plant sites, no increased risk of cancer was observed. Skin sensitization may be caused in susceptible humans; skin permeation can occur in amounts capable of producing effects of systemic toxicity.

## **Toluene**

Toxic effects described in animals include:

By skin or eye contact:  
Slight skin irritation, mild eye irritation, reduced spermatogenesis, no skin sensitization, kidney effects, liver effects

By inhalation:

Respiration rate changes, unconsciousness at high concentrations, central nervous system (CNS) effects, cardiac effects, long effects,

By ingestion:

Nonspecific effects, e. g. weight loss and irritation

By inhalation:

Tremors, hypothermia, anaesthetic effects,, lackof coordination, hearing loss, liver effects, kidney effects

Toxic effects chronic animal tests include:

By inhalation

Weight loss, liver effects,

Additional animal tests have shown:

Developmental toxicity, genetic damage in animals, no inheritable genetic damage.

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 rash and blurring of vision

Defatting of the skin

By inhalation:

Temporary nervous system depression with anaesthetic effects, e. g. dizziness, headache, confusion, lackof coordination and loss of consciousness; irritation of the upper respiratory passages

Nonspecific discomfort (e.g. nausea, headache, weakness):

By ingestion:

Severe irritation of the gastrointestinal tract with nausea, vomiting, abdominal cramps, diarrhea and pain.

Human effects of higher level acute, repeated, or chronic overexposure may include cardiovascular effects, temporary alteration of the heart's electrical activity with irregular pulse, palpitations or inadequate circulation; abnormal liver function as detected by laboratory test; abnormal kidney function as detected by laboratory tests.

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## **Section 07 First Aid Procedures And Physician Notes**

Emergency and first aid procedures:

Get medical assistance for all cases of over-exposure.

Skin:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. Call physician.

Eyes:

Immediately flush thoroughly with water for at least 15 minutes. Call physician.

Inhalation:

Remove to fresh air. Artificial respiration if breathing has stopped. If breathing is difficult, give oxygen. Call physician at once.

Ingestion:

If swallowed, do not induce vomiting. Immediately give two glasses of water. Never give anything by mouth to an unconscious person. Call physician at once.

**Special notes to physician:**

Because of the danger of aspiration, emesis or gastric lavage should not be employed unless the risk is justified by the presence of additional substances. Activated charcoal may induce vomiting, but may be given after emesis or lavage to absorb toxic additives. Steroid therapy in mild to moderate cases does not improve outcome. Bacterial pneumonia often occurs after exposure, but prophylactic antibiotics are not indicated and should be reserved for documented bacterial pneumonia. Because of the possible increased risk of eliciting cardiac dysrhythmias, catecholamine drugs, such as epinephrine, should be used with special caution in situations of emergency life support.

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**Section 08 Special Handling Information**

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.

Respirators with organic vapor cartridges provide adequate protection, within use limitations, for the following components of the product: butyl acetate.

#### Gloves:

Should be used when the possibility of skin contact exists. The suitability of a particular glove and glove material should be determined as part of an overall glove program. Considerations may include chemical breakthrough time, permeation rate, abrasion, cut and puncture resistance, flexibility, duration of contact with the product.

#### Recommended glove material:

butyl rubber

#### Other protection practices:

Appropriate eye protection such as chemical splash goggles should be used if the possibility of eye contact exists; protective outer clothing should be used where the possibility of body contact exists. Contaminated clothing should not be allowed out of the work place, it could cause a hazard in a residence and a particular danger to young children and pets.

#### 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.

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## Section 09 Special Precautions and Additional Information

LD (50): Not available presently

LC (50): Not available presently

Handling and Storage:

Do not store near heat of flame or other source of ignition (e.g. Electrical wiring or motors). We suggest keeping the tubes up-side-down in a refrigerator to reduce the tendency of the silver colloid to separate out in the neck of the tube.

Other:

Keep container tightly closed. Store in cool dry well-ventilated area.

Discard when expiration date passes.

Handling and Storage:

Keep container closed.

Store in a cool area away from ignition source and oxidizers.

Do not breathe vapors.

Do not get in eyes.

Avoid, prolonged, or repeated, skin contact.

Electrically ground all equipment when handling this product.

Store product below 90° F/32.2° C to ensure long product shelf life.

Additional information:

The following ingredients are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and CFR Part 372:

Ingredient (s) / CAS #	Weight %
Dibutyl phthalate/ 84-74-2	1-5
Silver, metallic/ 7440-22-4	> 60

This product is a physical mixture. The health effects information about this product is based on the individual ingredients; the data in this MSDS sheet relates only to the specific product designated herein and does not relate to its use in combination with any other material or in any process.

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## Section 10 Hazardous Ingredients

CAS #	Chemical Name	V.P. mm Hg@20C	Weight%
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108-65-6	1-methoxy-2-propanol acetate	3.7	10-30
112-07-2	Ethylene glycol monobutyl ether acetate	< 1.0	0.1 - 1%
7440-22-4	Silver (metallic)	n/a	> 60
Not known	Fatty acid derivative	n/a	1-5%
65859-05-4	Acrylic resin	n/a	5-10%
Not known	Amine compound	< 0.1	<0.1
108-88-3	Toluene	27	<0.1

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## Section 12: Ecological Information

Exotoxicity: No information found in our selected sources

Environmental Fate: No information found in our selected references.

Bioaccumulation: Not expected to occur.

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## 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.

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## Section 14: Transport Information

Shipping information:

Shipping name: Paint Related Material

Hazard Class: 3

UN/NA Class: UN1263

Label: Flammable liquid

## Section 15: Regulatory Information

TSCA: All components of this product are listed on the TSCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification Rule, they will be listed below.

TSCA 12(b) Component	Listed under TSCA Section
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SARA-Title 3, Section 313 Emissions Reporting Information (40 CFR 372)

This product contains a chemical which is listed in Section 313 at or above de minimus concentrations. The following listed chemicals are present:

CAS Number	Description	%
7440-22-4	n-butyl alcohol	> 60

California Prop. 65:  
Proposition 65 requires manufacturers or distributors of consumer products into the State of California to provide a warning statement if the product contains ingredients for which the State has found to cause cancer, birth defects or other reproductive harm. If this product contains an ingredient listed by the State of California to cause cancer or reproductive toxicity, it will be listed below:

Ingredient(s) / CAS#	Weight %
Toluene / 108-88-3	0.1

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## Section 16: Other Information

If this product should be used in ways that are outside of the intended applications in scanning electron microscope laboratories, and if it is going to be formulated into some other system, so that it becomes just another component of that other system, read the MSDS sheets for the other components before blending as the resulting mixture may have the hazards of all of its parts.

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