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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... May 12, 2011
(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

Hazardous Material Information System USA	Health	2	National Fire Protection Association USA	
	Fire Hazard	3		
	Reactivity	1		
	Personal Protection	B		

NFPA Rating:
(estimated) Health: 2; Flammability: 3; Reactivity: 1

Section 02 Composition

CAS #	Chemical Name	V.P. mm Hg@20C	LEL	Weight%
7440-22-4	Silver (metallic)	n/a	n/a	35-65
108-65-6	1-methoxy-2-propanol acetate	3.7	1.5	10-30
123-86-4	Butyl acetate	1.0	1.7	10-30
65859-05-4	Acrylic resin	n/a	n/a	5-10%

Chemical Formula..... Proprietary mixture

Section 03 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
membranes.

Silver metallic
Human effects of higher level acute, repeated or chronic overexposure my include
argyria.

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 olefractory 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 overexpose my 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.

Acrylic resin
Toxic effects described in animals include: Slight skin irritation Human health effects
of overexposure my 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.

Section 04 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 05 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 facepiece, positive pressure, self contained
breathing apparatus (SCBA).

Fire and explosion hazards:

Easily ignited material which burns wit 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 inareas and equipment with
appropriate National Electrical Code(NEC) classification. Consider the need
for spark proof tools. Ifthe product could be heated above its flashpoint
duringprocessing 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, andlocal 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 06 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 07 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 08 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 10 mg/m3 IDHL	0.01 mg/m3 TWA
Propylene Glycol Methyl Ethyl Acetate	N/A	N/A	N/A
Butyl Acetate	150 ppm 200 ppm STEL	150 ppm TWA 170 mg/m3 TWA 1700 ppm IDHL	150 ppm TWA 710 mg/m3 TWA

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 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 Weight..... 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 COx (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 olefractory 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 overexpose 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 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.

Silver metallic:
Human effects of higher level acute, repeated or chronic overexposure my include
argyria.

Acrylic resin:
Toxic effects described in animals include:
Slight skin irritation
Human health effects of overexposure my 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: No information found in our selected sources

Environmental Fate: No information found in our selected references.

Bioaccumulation: Not expected to occur.

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 ingregients 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 Vapours 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

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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
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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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