

SPI Supplies Division

Structure Probe, Inc.

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Manufacturer's CAGE: 1P573

Safety Data Sheet

Date Effective: March 20, 2017

SPI #'s 04977-AB, 04978-AB, 04979-AB

SPI SafeShip™ Nonflammable Ag Colloid

Section 1.1: Identification

Chemical Name/Synonyms..... SPI SafeShip™ Nonflammable Ag Colloid

Product or Trade Name Mixture of solvents, resins and silver metal particles

CAS #'s 7740-22-4; 111-76-2; 7664-41-7; 7732-18-5; n/a (non-hazardous modified acrylic resin.

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

Section 1.2: Relevant Uses/Restrictions

Mounting and grounding of specimens in electron microscopy.

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

OSHA Hazards

Combustible Liquid, Target Organ Effect, Harmful by ingestion., Harmful by skin absorption., Irritant

Target Organs

Lungs, Kidneys, Central nervous system

GHS Classification

- Flammable liquids (Category 4)
- Acute toxicity, Oral (Category 4)
- Acute toxicity, Inhalation (Category 4)
- Acute toxicity, Dermal (Category 4)
- Skin irritation (Category 2)
- Eye irritation (Category 2A)

2.2 Label elements

Pictogram



Signal Word: Danger

Hazard statement(s)

- H227 Combustible liquid
- H302 + H312 Harmful if swallowed or in contact with skin
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled.

Precautionary statement(s)

- P280 Wear protective gloves/ protective clothing.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

2.3 Other Hazards:

Hazardous Material Information System USA

- Health 1
- Fire Hazard 1
- Reactivity 0
- Personal Protection

NFPA Rating (estimated)

- Health 1
- Flammability..... 1
- Reactivity 0

Section 3: Composition

CAS#	EC#	Chemical Name	V.P.,mm Hg@20°C	Percent
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7440-22-4	231-131-3 Silver (metallic)	n/a	65-75
111-76-2	203-905-0 2-Butoxy Ethanol	0.6	2-5
7664-41-7	231-635-3 Ammonia	560	1-3
7732-18-5	231-791-2 Water	n/a	15-25
Non-Hazardous	n/a Modified Acrylic Resin	n/a	5-15

n/a = not available

Section 4: First Aid Measures

4.1 Description of first aid measures:

Emergency First Aid Procedures:

Eyes: Flush with large amounts of water for at least 15 minutes. Seek medical attention if discomfort persists.

Skin: Remove contaminated clothing. Wash skin with soap and water. Seek medical attention if discomfort persists.

Inhalation: Remove to fresh air. Give oxygen if breathing is difficult or artificial respiration if breathing has stopped and seek medical attention.

Ingestion: Give two or more glasses of water. Do not induce vomiting. Seek medical attention. Never give liquids by mouth to an unconscious person.

Section 5: Fire Fighting Measures

Flash Point..... 157°F Method Used: Tag Closed Cup

Fire Extinguishing Media:

Because this product is aqueous based, it will not burn.

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). However this product is sold only in small bottles. Hence one should be fighting the fire on the basis of what else is in the vicinity of the fire.

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.

Closed containers may explode when exposed to extreme heat due to vapor pressure increase - cool overheated closed containers with water spray.

Material may be easily ignited and will burn rapidly with intense heat.

Section 6: Accidental Release Measures

Spill Response:

Evacuate the area of all unnecessary personnel. However, considering that the product is sold only in small bottles and typically one would not have more than one bottle present, this might be an extreme measure to be taking.

Action to take for spills:

For small spills:

Absorb on to rags, sand, or other absorbent material.

For large spills:

Since the product is offered only in little bottles, we don't envision any possible way there could be a "large spill" of this product.

Disposal considerations:

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

Section 7: Handling and Storage

7. Handling and Storage:

Keep container closed.

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

Do not breath 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.

Do not store neat heat of flame or other source of ignition
(e.g. Electrical wiring or motors).

Other:

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

Section 8: Exposure Controls and Personal Protection

Adequate local ventilation should be used to keep exposures below applicable limits. Respiratory protection will be needed if exposures cannot 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. 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 or Neoprene.

Other protection practices:

An eyewash station and an emergency shower must be available.

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 (29 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 9: Physical and Chemical Properties

Boiling Point..... 212° to 246° F

Formula Weight..... Not available

Coeff. of Water/Oil Dist. Not available

pH (Liquids Only)..... Not available

% Volatile By Weight..... <5%

Freezing Point..... 32° F

Vapor Pressure..... 1mm @ 20° C

Vapor Density/Air is 1... Heavier than Air

Solubility In Water..... >10%

Appearance and Color..... Gray viscous liquid

Specific Gravity..... 2.5

Evaporation Rate..... Slower than n-Butyl Acetate

Odor..... Mild odor

9.2 Other information: No additional information available.

Section 10: Stability and Reactivity

Stable: Yes

Hazardous Polymerization:
This product does not polymerize.

Hazardous Decomposition Products:
At high temperature may include CO₂ (carbon dioxide / carbon monoxide), smoke, aliphatic aldehydes and carboxylic acids.

Conditions to avoid:
Heat, Contact with ignition source, strong oxidizing conditions

Materials to avoid:
Oxidizing agents, acids, strong bases, caustics, amines, alkali contamination

Instability:
This product is stable.

Section 11: Toxicological Information

Toxicological Information:

Substance	PEL	TLV	(twa)
Silver	0.01	0.1	n/a
2-Butoxy Ethanol	25.0	120.0	25.0
Ammonia	50.0	n/a	25.0

For 2-Butoxy Ethanol: LD50, rat, oral = 4.7
LC50, rat, inhal (ppm) = 450

Carcinogenicity

IARC: For CAS# 111-76-2: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (2-Butoxyethanol)
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

Section 12: Ecological Information

Exotoxicity: No information found in our selected sources

Environmental Fate: No information found in our selected references.

Bio-accumulation: 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.

Section 14: Transport Information

Shipping information:

Non-hazardous from standpoint of shipping.

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

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	%
7664-41-7	ammonia	1-3

SARA III Section 311 and 312 Hazard Classification: Fire Hazard

CERCLA:

Ozone Depleting Substances: Does not contain and is not
Manufactured with an ozone depleting substance subject to
Clean Air Act Amendments 1990 CFR-82.

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 %
Ammonia	7664-41-7	1-3
Silver, metallic	7440-22-4	> 65
2-Butoxyethanol	111-76-2	2-5

Massachusetts Right To Know Components

2-Butoxyethanol, CAS-No. 111-76-2 Revision Date:1993-04-24

Pennsylvania Right To Know Components

2-Butoxyethanol, CAS-No. 111-76-2 Revision Date:1993-04-24

New Jersey Right To Know Components

2-Butoxyethanol, CAS-No. 111-76-2 Revision Date:1993-04-24

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 %
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CANADA

DSL: CAS#'s 7440-22-4, 111-76-2, 7664-41-7, and 7732-18-5 are on the DSL List.

WHMIS: Status: Non-controlled

15.2 Additional Information

Date of Preparation: March 20, 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
- 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 or fluids.

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