

SPI Supplies Division

Structure Probe, Inc.

206 Garfield Ave., West Chester, PA 19381-0656 USA

Phone: 1-(610)-436-5400 Fax: 1-(610)-436-5755

sds@2spi.com

<http://www.2spi.com>

Manufacturer's CAGE: 1P573

Safety Data Sheet

Date Effective: April 17, 2017

SPI Catalog #'s 02820-DA, 02820-MB

SPI-Chem® Aminopropyltriethoxysilane (APTES)

Section 1.1: Identification

Chemical Name/Synonyms Aminopropyltriethoxysilane; 3-Aminopropyltriethoxysilane

Product or Trade Name SPI-Chem® Aminopropyltriethoxysilane (APTES)

CAS #'s 919-30-2

Chemical Formula..... C₉H₂₃NO₃Si

Section 1.2: Relevant Uses/Restrictions

Chemical intermediate

For research and industrial use only

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)

Acute toxicity (oral) – category 4

Skin Corrosion – category 1B

Eye damage – category 1

STOT SE – category 3

2.2 Label elements

Pictogram



Signal Word: Danger

Hazard statements:

- H302: Harmful if swallowed
- H314: Causes severe skin burns and eye damage
- H318: Causes serious eye damage
- H335: may cause respiratory irritation

Precautionary statements:

- P280: Wear protective gloves/ protective clothing/ eye protection/ face protection
- P260: Do not breathe vapors
- P264: Wash hands thoroughly after handling
- P270: Do not eat, drink or smoke when using this product
- P271: Use only outdoors or in a well-ventilated area
- P301 + P312: If swallowed: Call a doctor if you feel unwell
- P301 + P331 + P331: If swallowed: rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P353: If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
- P304 + P340: If inhaled: Remove person to fresh air and keep comfortable for breathing
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310: Immediately call a doctor.
- P330: Rinse mouth
- P363: Wash contaminated clothing before reuse.
- P403 + P233: Store in a well-ventilated place. Keep container tightly closed.
- P405: Store locked up
- P501: Dispose of contents/ container to licensed waste disposal facility

2.3 Other Hazards:

Other hazards not contributing to the classification:

The hydrolysis product of this compound is ethanol. Overexposure to ethanol by skin absorption, inhalation or ingestion may have a narcotic effect (headache, nausea, drowsiness). Ethanol is metabolized to acetaldehyde and acetic acid which in large quantities result in metabolic acidosis, CNS depression and death due to respiratory arrest. This product contains ethanol which is classified as a carcinogen by IARC in alcoholic beverages.

Hazardous Material Information System USA

Health 3
Fire Hazard 1
Reactivity 1
Personal Protection

NFPA Rating (estimated)

Health 3

Flammability..... 1
Reactivity 1

Section 3: Composition

3.1 Substances:

Substance type: Mono-constituent
Name: 3-Aminopropyltriethoxysilane
CAS #: 919-30-2
EC No.: 213-048-4
EC index no.: 612-108-00-0
RTECS #: TX2100000

Name	CAS #	Percentage	Classification (GHS-US)
3-Aminopropyltriethoxysilane	919-30-2	>97%	Acute Toxicity (oral) 4 Skin corrosion 1B Eye damage 1 STOT SE 3
Ethanol	64-17-5		Flammable liquid 2 Carcinogen 1A STOT SE 3

Section 4: First Aid Measures

4.1 Description of first aid measures:

General:

Remove contaminated clothing and shoes.
In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).
If possible show this sheet; if not available show packaging or label.

Inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing.
If you feel unwell, seek medical advice.

Skin Contact:

Wash with plenty of soap and water.
Get immediate medical advice/ attention.

Eye Contact:

Immediately flush eyes thoroughly with water for at least 15 minutes.
Get immediate medical advice/ attention.

Ingestion:

Never give anything by mouth to an unconscious person.
Get medical advice/ attention.

Self-protection of the first aider:

No further relevant information available.

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

Symptoms/injuries:

Causes severe skin burns and eye damage.

Symptoms/injuries after inhalation:

May cause respiratory irritation.

Overexposure may cause: Coughing. Headache. Nausea.

Symptoms/injuries after skin contact:

Causes burns. Primary irritation index: 6.50.

Symptoms/ injuries after eye contact:

Causes serious eye damage.

Symptoms/injuries after ingestion:

Harmful if swallowed.

Swallowing a small quantity of this material will result in serious health hazard.

Chronic symptoms:

On contact with water this compound liberates ethanol which is known to have a chronic effect on the central nervous system.

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

No additional information available.

Section 5: Fire Fighting Measures

5.1 Extinguishing media

Suitable extinguishing media: Water spray. Foam. Carbon dioxide. Dry chemical.

5.2 Special hazards arising from the substance or mixture

Fire hazard: Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

5.3 Advice for firefighters

Firefighting instructions: Use water spray to cool exposed surfaces.

Exercise caution when fighting any chemical fire.

Protection during fire-fighting:

Do not enter fire area without proper protective equipment, including respiratory protection.

Avoid all eye and skin contact and do not breathe vapor and mist.

Section 6: Accidental Release Measures

6.1 Personal precautions

For non-emergency personnel: Evacuate all unnecessary personnel.

For emergency responders: Equip cleanup crew with proper protection.

6.2 Environmental precautions

Prevent entry to sewers and public waters.

Notify authorities if liquid enters sewers or public waters.

6.3 Methods and material for containment and cleaning up

Clean up any spills as soon as possible, using an absorbent material to collect it.

Sweep or shovel spills into appropriate container for disposal.

6.4 Reference to other sections

For disposal – See Section 13.

Section 7: Handling and Storage

7.1 Precautions for safe handling

Protective measures

- Avoid all eye and skin contact.
- Do not breathe vapor and mist.
- Provide good ventilation in process area to prevent accumulation of vapors.

Advice on general hygiene conditions

- Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
- Wash contaminated clothing before reuse.

7.2 Conditions for safe storage, including any incompatibilities

- Storage conditions – keep container tightly closed.
- Incompatible materials – Acids, Alcohols, Moisture, Oxidizing agents, Peroxides, Water.
- Storage area – Store in a well ventilated place. Store away from heat.

7.3 Specific end uses

- Chemical intermediate.
- For research and industrial use only.
- 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

Ethanol, CAS # 64-17-5 (Hydrolysis product of this compound)

USA ACGIH	ACGIH STEL (ppm)	1000 ppm
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	1900 mg/m ³
USA NIOSH	NIOSH REL (TWA) (ppm)	1000 ppm
USA OSHA	OSHA PEL (TWA) (mg/m ³)	1900 mg/m ³
USA OSHA	OSHA PEL (TWA) (ppm)	1000 ppm
USA IDLH	US IDLH (ppm)	3300 ppm (10% LEL)

Biological limit values: No additional information available.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

- Provide local exhaust or general room ventilation.

8.2.2 Individual protection measures

- Avoid all unnecessary exposure.
- Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
- Hand protection: Neoprene or nitrile rubber gloves.
- Eye protection: Chemical goggles or face shield. Contact lenses should not be worn.
- Skin and body protection: Wear suitable protective clothing.
- Respiratory protection: NIOSH-certified combination organic vapor – amine gas (brown cartridge) respirator.

8.2.3 Environmental exposure controls

- No further relevant information available.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance: Clear liquid, straw color

Refractive index: 1.4225

Molar mass: 221.37 g/mol

Odor: Amine, ammonia-like

Odor threshold: No data available

pH: No data available

Melting point: No data available

Freezing point: <0 °C

Boiling point/Boiling point range: 122-123 °C @ 30 mm Hg

Flash Point: 104 °C

Evaporation rate (butyl acetate=1): <1

Flammability (solid, gas): No data available

Upper/lower flammability or explosive limits: No data available

Vapor Pressure: 10 mm Hg @ 100 °C

Relative vapor density at 20 °C: >1

Relative density: 0.951

Solubility: Reacts with water

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

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Viscosity, kinematic: 1.6 cSt

Viscosity, dynamic: No data available

Explosive properties: No data available

Oxidizing Properties: No data available

9.2 Other information: No additional information available.

Section 10: Stability and Reactivity

10.1 Reactivity: No additional information available.

10.2 Chemical Stability: Stable when stored in sealed containers.

10.3 Possibility of Hazardous Reactions: Reacts with water and moisture in air, liberating ethanol

10.4 Conditions to avoid: Heat. Sparks. Open flame.

10.5 Incompatible materials: Acids. Alcohols. Moisture. Oxidizing agents. Peroxides. Water.

10.6 Hazardous decomposition products: Ethanol. Organic acid vapors.

Section 11: Toxicological Information

11.1 Information on toxicological effects

A, Acute toxicity: Oral: Harmful if swallowed.

3-Aminopropyltriethoxysilane (919-30-2): ATE US (oral): 1873 mg/kg body weight.

3-Aminopropyltriethoxysilane (919-30-2): LD50 oral rat: 1780 mg/kg
ATE US (oral): 1780.000 mg/kg body weight

Ethanol (64-17-5): LC50 inhalation rat: 124.7 mg/l/4h

B. Skin corrosion/irritation: Causes severe skin burns and eye damage.

C. Serious eye damage/irritation: Causes serious eye damage.

D. Respiratory or skin sensitization: Not classified.

E. Germ cell mutagenicity: Not classified.

F. Carcinogenicity: Not classified.

Ethanol (64-17-5): IARC Group: 1 – Carcinogenic to humans.

G. Reproductive toxicity: Not classified.

H. STOT-single exposure: May cause respiratory irritation.

I, STOT-repeated exposure: Not classified.

J. Aspiration hazard: Not classified.

Symptoms/ injuries after inhalation:

May cause respiratory irritation.

Over exposure may cause: Coughing. Headache. Nausea.

Symptoms/injuries after skin contact:

Cause burns. Primary irritation index: 6.50.

Symptoms/injuries after eye contact:

Causes serious eye damage.

Symptoms/injuries after ingestion:

Harmful if swallowed.

Swallowing a small quantity of this material will result in serious health hazard.

Chronic symptoms:

On contact with water this compound liberates ethanol which is known to have a chronic effect on the central nervous system.

Reason for classification: Expert judgement.

Section 12: Ecological Information

12.1 Toxicity

Ethanol (64-17-5)

LC50 fish 1: 12.0-16.0 mg/l (Exposure time: 96 h – Species: *Oncorhynchus mykiss* [static])

EC50 Daphnia 1: 9268-1422 mg/l (Exposure time: 48 h – Species: *Daphnia magna*)

LC50 fish 2: >100 mg/l (Exposure time: 96 h – Species: *Pimephales promelas* [static])

EC50 Daphnia 2: 2 mg/l (Exposure time: 48 h – Species: *Daphnia magna* [static])

12.2 Persistence and degradability

3-Aminopropyltriethoxysilane (919-30-2): Not established.

12.3 Bio-accumulative potential

3-Aminopropyltriethoxysilane (919-30-2): Not established

Ethanol (64-17-5): Log Pow: -0.32

12.4 Mobility in soil: No additional information available.

12.5 Results of PBT and vPvB assessment: No data available.

12.6 Other adverse effects

This substance may be hazardous to the environment.

Effect on ozone layer: No additional information available.

Effect on the global warming: No known ecological damage caused by this product.

Section 13: Disposal Considerations

13.1 Waste treatment methods

Waste disposal recommendations:

May be incinerated.

Dispose of contents/container to licensed waste disposal facility.

Dispose in a safe manner in accordance with local/national regulations.

Ecology – waste materials: Avoid release to the environment.

Section 14: Transport Information

DOT

DOT UN No.: UN2735

Proper Shipping Name: Amines, Liquid, Corrosive, n.o.s. ((3-Aminopropyl)triethoxysilane)

Class: 8

Packing Group: II

Emergency Response Guide Number: 153

IATA

UN No.: UN2735

Proper Shipping Name: Amines, Liquid, Corrosive, n.o.s. ((3-Aminopropyl)triethoxysilane)

Class: 8

Packing Group: II

Section 15: Regulatory Information

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

TSCA: All components of this product are listed on the TSCA Inventory.

SARA 302: No components of this product are listed.

SARA 311/312:

Acute Health Hazard: CAS #'s 919-30-2 and 64-17-5

Chronic Health Hazard: CAS #'s 919-30-2 and 64-17-5

Fire Hazard: CAS #'s 919-30-2 and 64-17-5

Sudden Release of Pressure: No components listed.

Reactive Hazard: No components listed.

SARA 313: No components of this product are listed.

State Right-to-Know Lists:

Massachusetts:

Ethanol, 64-17-5 is listed.

Pennsylvania:

3-Aminopropyltriethoxysilane, CAS # 919-30-2 is listed.

Ethanol, CAS# 64-17-5 is listed.

New Jersey:

3-Aminopropyltriethoxysilane, CAS# 919-30-2 is listed.

Ethanol, CAS# 64-17-5 is listed.

California Prop. 65:

Carcinogens List: Ethanol, CAS# 64-17-5 is listed.

Developmental Toxicity List: Ethanol, CAS# 64-17-5 is listed.

15.2 Chemical Safety Assessment

No further relevant information is available.

Date of Preparation: 17 April 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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