Safety Data Sheet

1. Product and Company Identification

Product Name: **EpoPro® 109B**
Material Uses: Adhesive & Encapsulating Hardener
(M)SDS#: 109B-20191120
Validation Date: November-20-2019
Supplier/Manufacturer: Specialty Polymers & Services, Inc. (SP&S, Inc.)
27822 Fremont Court
Valencia, California (CA) 91355, U.S.A.
Non-emergency phone number: (661) 294-1790 (7AM – 5PM PST)
E-mail: msds@spolymers.com

In case of emergency: Chemtrec (800) 424-9300 or (703) 527-3887

2. Hazards Identification

GHS CLASSIFICATION OF SUBSTANCE OR MIXTURE:

Skin corrosion/irritation:	Category 1B, H314	Eye damage/irritation:	Category 1, H318
Skin sensitization:	Category 1, H317	Acute toxicity (Dermal):	Category 4, H312
Acute toxicity (Oral):	Category 4, H302	Aquatic toxicity, Chronic:	Category 3, H412

GHS LABEL ELEMENTS:

HAZARD SYMBOLS:

SIGNAL WORDS: DANGER!

HAZARD STATEMENTS:

H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H302 Harmful if swallowed.
H318 Causes serious eye damage.
H312 Harmful in contact with skin.
H412 Harmful to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

PREVENTION:
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe mists.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
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.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves, clothing, and eye/face protection.

RESPONSE:
P301+P330+P331+P312 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call POISON CENTER and/or doctor if you feel unwell.
P303+P361+P364+P353+P352+P312 IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash before reuse. Rinse skin with water/shower. Wash with plenty of soap and water. Call a POISON CENTER and/or doctor if you feel unwell.
P333+P313 If skin irritation or rash occurs: Get medical attention.
P304+P340+P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER and/or doctor.

P305+P351+P338+P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER and/or doctor.
P308+P313 IF exposed or concerned: Get medical attention.
P391 Collect spillage.

STORAGE: P405 Store locked up.

DISPOSAL: P501 Dispose of contents and containers in accordance with local, regional and international regulations.

Precautionary statements are listed according to the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS) – Annex III

See toxicological information (section 11)
General Information: Read entire MSDS for a more thorough evaluation of the hazards

3. Composition / Information on Ingredients

Name	CAS Number	%
Triethylenetetramine	112-24-3	60 - 100

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

4. First Aid Measures

Eye Contact:	Check for and remove any contact lenses. Immediately flush eyes for at least 15 minutes with running water. Hold eyelids apart to ensure rinsing of the entire eye surface and lids with water. Get immediate medical attention.
Skin Contact:	In case of contact, wash affected areas with plenty of water, and soap, if available, for several minutes. Remove and clean contaminated clothing and shoes before re-use. Get immediate medical attention.
Inhalation:	Move exposed person to fresh air. If not breathing, give artificial respiration or oxygen. If breathing is difficult, transport to medical care and, if available, give supplemental oxygen. Loosen tight clothing such as a collar, tie, belt, or waistband. Get immediate medical attention.
Ingestion:	Wash out mouth with water. If swallowed dilute by giving two (2) glasses water to drink. Do not induce vomiting until direct to do so by medical personnel. Never give anything by mouth to an unconscious person. Get immediate medical attention.
Note to physician:	No specific treatment. Treat symptomatically. Applications of corticosteroid cream has been effective in treating skin irritation. Call poison control center if large quantities were ingested.

5. Fire-Fighting Measures

Flash point:	118°C (244.4°F) closed cup
Hazardous Thermal Decomposition Products:	Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxide, other oxides, nitric acid, ammonia, nitrosamine. Burning produces noxious and toxic fumes.
Extinguishing Media:	Carbon dioxide, foam, dry chemical, water spray as suitable for the surrounding fire.
Special Exposure Hazards:	Promptly isolate the scene by removing all persons from the vicinity of the fire. No actions shall be taken involving any personal risk or without suitable training.
Special Protective equipment for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Do not allow run-off from firefighting to enter drains or water courses. Use of water may result in the formation of very toxic aqueous solutions.

6. Accidental Release Measures

Personal Precautions:	No actions shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering area. Do not touch or walk through spilled material. Avoid breathing vapor or mist and provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
Environmental Precautions:	Avoid dispersal of spilled material and runoff that leads to contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution.

Methods of Clean Up: Stop leak if without risk. Move containers from spill area. Approach spill from up wind if possible. Prevent spill from entering sewers, rivers and other water courses, basements, or confined areas. Wash into effluent treatment plant or proceed as follows. Neutralize with acid. Contain and collect spillage with non-combustible, absorbent material (e.g. sand, earth, vermiculite, or diatomaceous earth) and place in container for disposal according to local regulations. Dispose of only using a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information.

7. Handling and Storage

Handling: Wear appropriate personal protective equipment (see Section 8) when handling. Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed. Eating, drinking, and smoking should be prohibited in areas where chemicals are handled, stored, or processed. Workers should wash hands and face before eating, drinking, and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Persons with a history of skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in processes where this material is used. Keep in the original container or a suitable alternate made from a compatible material. Keep all containers tightly closed when not in use. Empty containers retain product residue and should be disposed of properly. Do not reuse empty containers for other purposes or to hold other materials.

Storage: Store in accordance with local regulations. Store in original containers, protect from direct sunlight and keep in a dry, cool, well ventilated areas. Keep away from incompatible materials (see Section 10) and food and drink. Keep all containers tightly closed when not in use and tightly re-seal after use. Keep container upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure Controls / Personal Protection

Ingredient	Exposure limits
Triethylenetetramine	WEEL – TWA: 1 ppm / 6 mg/m^3

Recommended Monitoring Procedures: If this product contains ingredients with exposure limits, personal, workplace, atmospheric, or biological monitoring may be required to determine the effectiveness of the ventilation system or other control measures and/or to determine whether it is necessary to use respiratory protective equipment. Consider European Standard EN 689 or similar industry or governmental guidelines for appropriate methods for the assessment of exposure by inhalation to chemical agents and/or hazardous substances.

Engineering measures: No special ventilation requirements are necessary for this product. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure below the recommended or statutory limits

Hygiene measures: Wash hands, forearms, and face thoroughly after handling any chemical products, before eating, smoking, and using the lavatory and at the end of the work period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protection

Respiratory: A respiratory protection program in compliance with 29CFR1910.134, or other applicable regulatory standard must be followed whenever exposure limits may be exceeded. If engineering controls are not feasible, or if inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands: Wear neoprene, nitrile rubber, butyl rubber or other suitable impervious gloves; consider European Standard EN374 or similar industry or governmental guidelines. Consider the parameters specified by the glove manufacture and check gloves during use to ensure they are retaining their protective properties. Gloves selected must have a breakthrough rating appropriate for the work shift. If a risk assessment indicates that it is necessary, gloves should always be worn when handling chemical products.

Eyes: When a risk assessment indicates, safety eyewear complying with an approved standard, such as OSHA Standard 29CFR1910.133 or European Standard EN166, should be used to avoid exposure to

liquid splashes, mists, or dusts. If contact is possible, at a minimum use chemical splash googles. If significant splash hazard may occur, consider using a full-face shield.

Skin: Personal Protective equipment for the body should be selected based on the task being performed and the risks involved. Typical protective equipment includes non-absorbent lab coats, disposable protective sleeves, coats, or whole-body suits. Consider CFR1910.132 and CFR1910.136 for OSHA approved standards on protective clothing and footwear. Consider seeing a safety specialist to determine the appropriate level of protection for your task.

Environmental Exposure Controls: Emissions from ventilation or work processes should be checked to ensure they comply with the requirements of environmental regulations. In some cases, fume scrubbers, filters, or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and Chemical Properties

Appearance:	Clear, light yellow to amber liquid	Odor	Slight, ammoniacal
Boiling Point:	>240°C (>464°F) (initial)	Freezing Point:	<-20°C
Flash Point:	118°C (244.4°F) closed cup	pH	~ 10
Auto-ignition Temperature:	294°C (561.2°F)		
Vapor Pressure:	<0.1 mm Hg at 20°C (68 °F)	Water Solubility:	appreciable
Specific Gravity:	0.98	Vapor Density:	>5 (Air = 1)
Evaporation Rate:	<0.1 (butyl acetate =1)	VOC:	<10 g/ L (estimated)
Viscosity:	< 100 cP		

10. Stability and Reactivity

Chemical Stability: This product is stable, under normal conditions of storage and use, hazardous reactions will not occur.

Hazardous Polymerization: Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to Avoid: High temperatures and exposure to strong oxidizing agents, organic acids (i.e. acetic acid, citric acid etc.), mineral acids, nitrous acid and other nitrosating agents, sodium hypochlorite and bulk epoxy resins. Product slowly corrodes copper, aluminum, zinc and galvanized surfaces. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. CAUTION! N-Nitrosamines, many of which are known to be potent carcinogens, may be formed when the product comes in contact with nitrous acid, nitrites, or atmospheres with high nitrous oxide concentrations.

Hazardous Decomposition Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxide, other oxides, nitric acid, ammonia, nitrosamine. Burning produces noxious and toxic fumes.

11. Toxicological Information

Acute Toxicity

Product/Ingredient Name	Test	Endpoint	Species	Result
Triethylenetetramine	-	LC0 Inhalation Vapor	Not available	may cause allergic response
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit – Male and Female	1,465 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat – Male and Female	1,716 mg/kg

Irritation / Corrosion

Product/Ingredient Name	Test	Species	Result
Triethylenetetramine	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin – Severe irritant
	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	Eyes – Severe irritant

Sensitizer

Product/Ingredient Name	Test	Species	Result
Triethylenetetramine	OECD 406 Skin Sensitization	Skin / Guinea Pig	Causes sensitization

Mutagenicity

Product/Ingredient Name	Test	Result
Triethylenetetramine	In Vitro; OECD Test Guideline 471; Concentration 0 – 1670 µg/plate; with and without metabolic activation.	Positive
	In Vitro; OECD Test Guideline 482; Concentration 0 – 200 µg/l; metabolic activation: negative.	Negative
	In Vivo; OECD Test Guideline 474; Intraperitoneal injection; Exposure time: 0 – 600 mg/kg	Negative

Conclusion/ Summary: the weight of evidence does not support classification as a germ cell mutagen.

Carcinogenicity

Product/Ingredient Name	Test	Species	Dose	Exposure	Result/Result type
Triethylenetetramine	OECD Test Guideline 451	Mouse-Male	42 mg/kg (dermal)	3 daily	Negative-Dermal

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC, ACGIH, NTP or OSHA.

Reproductive Toxicity

Product/Ingredient Name	Test	Species	Maternal Toxicity	Fertility	Developmental Effects
No data available					

Teratogenicity

Product/Ingredient Name	Test	Species	Results
Triethylenetetramine	OECD Test Guideline 414; Oral	Rat	No teratogenic effects; NOAEL: > 750 mg/kg body weight
	OECD Test Guideline 414; Dermal	Rabbit	No teratogenic effects; NOAEL: 125 mg/kg body weight

Potential Acute Health Effects

Inhalation: Can cause severe eye, skin and respiratory tract burns. May cause nose, throat, and lung irritation. Inhalation of vapors and/or aerosols in high concentration may cause irritation of respiratory system.

Ingestion: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

Skin Contact: Toxic in contact with skin. Causes skin burns.

Eye Contact: Causes eye burns. May cause blindness. Severe eye irritation.

Potential Chronic Health Effects

Product/Ingredient Name	Test	Endpoint	Species	Results
Triethylenetetramine	Ingestion; Exposure time: 26 7 h	Sub-chronic NOAEL Oral	Rat-Male, Female	50 mg/kg/d

General: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels

Target Organs: No known significant effects or critical hazards

Carcinogenicity: No known significant effects or critical hazards

Mutagenicity: No known significant effects or critical hazards

Teratogenicity: No known significant effects or critical hazards

Developmental Effects: No known significant effects or critical hazards

Fertility Effects: No known significant effects or critical hazards

12. Ecological Information

Environmental Effects: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Water polluting material. May be harmful to the environment if released in large quantities.

Aquatic Ecotoxicity

Product/Ingredient Name	Test	Endpoint	Exposure	Species	Result
Triethylenetetramine	OECD Test Guideline 201	Acute ErC50	72 hours Semi-static	Algae	20 mg/L
	Directive 67/548/EEC, Annex V, C.2.	Acute EC50	48 hours Static	Daphnia	31.1 mg/L
	-	Acute EC50	0.5 hours Static	Activated Sludge	800 mg/L
	OECD 203 Fish, Acute toxicity test	Acute LC50	96 hours Static	Fish	330 mg/L
	OECD Test Guideline 202	Chronic EC10	21 days Semi-static	Daphnia	1.9 mg/L

Persistence and Degradability

Product/Ingredient Name	Test	Period	Result
Triethylenetetramine	OECD Test Guideline 301D-Activated Sludge	162 days	0 %
	Inherent Biodegradability: Modified SCAS Test – Activated Sludge	84 days	20 %

Product/Ingredient Name	Aquatic half-life	Photolysis	Biodegradability
Triethylenetetramine	-	-	Not readily biodegradable
	-	-	Not readily biodegradable

Bioaccumulative potential

Product/Ingredient Name	Log P_{ow}	BCF	Potential
Triethylenetetramine	-2.65 (68°F / 20°C)	-	-

Other adverse effects: No known significant effects or critical hazards

Other information: BOD5: 5% COD: 1.94 mg/mg TOC: Not determined

13. Disposal Consideration

Waste Disposal Method: Disposal of this products, solutions, and by-products should at all times comply with the requirements of environmental and waste disposal legislation and any regional or local authority requirements. Dispose of surplus, non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed on untreated to the sewer system unless this is complaint with all applicable laws and regulations. Incineration by an approved and licensed contractor is the most common disposal method. Packaging materials that and absorbents containing the product can typically be landfilled or incinerated. Contact local authorities to determine the proper means of disposal in your area.

14. Transport Information

DOT: Non-Bulk **Label:** Corrosive
Proper Shipping Name: Amines, liquid, corrosive (Triethylenetetramine)
Hazard Class: 8 **ID Number:** UN2735 **Packing Group:** PGII

IATA: Non-Bulk **Label:** Corrosive
Proper Shipping Name: Amines, liquid, corrosive (Triethylenetetramine)
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15. REGULATORY INFORMATION

US Federal Regulations:

Occupational Safety and Health Act (OSHA): This product is a hazardous chemical under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Resource Conservation and Recovery Act (RCRA): This product is a hazardous waste under RCRA (40 CFR 261).

SARA Title III Section 304 - CERCLA: This product does not contain chemicals regulated under Section 304 as extremely hazardous substance(s) for emergency release notification ("CERCLA" List):

SARA Title III: Section 311/312 - Hazard Communication Standard (HCS): Per the June 13, 2016 Federal Register notice, EPA harmonized the EPCRA 311/312 hazard categories with the 2012 OSHA hazard communication standard for classifying and labeling of chemicals (i.e. GHS). Please refer to section 2 of the SDS to identify the appropriate hazard categories for reporting purposes.

SARA Title III: Section 313 Toxic Chemical List (TCL): This product does not contain a toxic chemical for routine annual Toxic Chemical Release Reporting under section 313 (40 CFR 372).

TSCA Section 8(b) - Inventory Status: All chemical(s) comprising this product are listed on the TSCA inventory.

TSCA Section 12(b) - Export Notification: This product does not contain chemicals which are subject to Section 12(b) export notification.

State Regulations:

California Proposition 65: This product does not expose you to chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

International Regulations:

WHMIS: Class D-2B: Material causing other toxic effects
Class E: Corrosive material

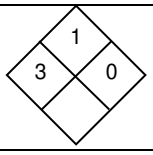
International Lists:

Australia Inventory (AICS):	all components are listed or exempt	Malaysia Inventory (EHS register):	not determined
Canadian Inventory (DSL):	all components are listed or exempt	New Zealand Inv. of Chem. (NZIoC):	all components are listed or exempt
China Inventory (IECSC):	all components are listed or exempt	Philippines Inventory (PICCS):	all components are listed or exempt
Japan Inventory (ENCS):	all components are listed or exempt	Taiwan Inventory (CSNN):	all components are listed or exempt
Korea Inventory (KECI):	all components are listed or exempt	Europe Inventory (EINECS):	all components are listed or exempt

16. OTHER INFORMATION

Hazardous Material Information System (HMIS) - USA	
Health	3
Flammability	1
Physical Hazards	0
Personal Protection	C*

National Fire Protection Association (USA):



*suggested minimum personal protection equipment. End user must determine appropriateness of these suggestions for their applications and usage conditions.

Reason Issued: update
Prepared By: Preston White **Approved By:** Chris Meyer Title: Vice President

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IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF PRODUCTS FOR THE USER'S PARTICULAR PURPOSE(S).

THIS PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.