

SAFETY DATA SHEET

According to Regulation (EC) No 1907/2006 (REACH)

1. PRODUCT IDENTIFICATION

Trade Name(s): Geo-Seal EFC Clear Coat – Part B

Description: Epoxy Curing Agent

Synonyms: N/A

CAS No: N/A

Supplier:

EPRO Services, Inc.

PO Box 347

Derby, KS 67037

800-882-1896 (8:00am – 5:00pm CST)

2. HAZARD(S) IDENTIFICATION

Classification

Acute Toxicity – Category 4

Respiratory Sensitizer – Category 1

Skin Sensitizer – Category 1

Skin Sensitizer – Category 1

Pictograms



Signal Word: Danger

Information Concerning Particular Hazards for Human and Environment: This product must be labeled due to the calculation procedure of the General Classification guideline for preparations of the EU in the latest valid version.

Classification System: The classification is according to the latest editions of the EU-lists and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists and is supplemented by information from technical literature and by information provided by the company.

Hazard-determining Components of Labeling

Hexamethylene diisocyanate oligomers, Isocyanurate
hexamethylene-di-isocyanate

Hazardous Statements: Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. May cause respiratory irritation.

Precautionary Statements: Avoid breathing dust/fume/gas/mist/vapors/spray. In case of inadequate ventilation wear respiratory protection. Wear protective gloves/protective clothing/eye protection/face protection. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Wash with plenty of water. If skin irritation or a rash occurs: Get medical advice/attention. Store in a well-ventilated place. Keep container tightly closed.

Hazard Description: Use with caution. Harmful if inhaled. May cause skin, eye, and respiratory tract irritation. Possible sensitizer. Reacts with common materials including water, alcohols, bases, and amines releasing large amounts of carbon dioxide.

NFPA ratings (scale 0 – 4)

Health = 2

Fire = 1

Reactivity = 1

HMIS ratings (scale 0 – 4)

Health = 2

Flammability = 1

Reactivity = 1

HMIS Long Term Health Hazard Substances: None of the ingredients is listed.

Other hazards: Combustible liquid. On contact with water carbon dioxide is released. This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens. Asthmatic sensitization can occur from a single large inhalation exposure or from repeated lower inhalation exposures. Strict observation of exposure limits is essential (see Section 8).

Results of PBT and vPvB Assessment:

PBT: Not applicable.

vPvB: Not applicable.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS	Chemical Name	%
28182-81-2	Hexamethylene diisocyanate oligomers, Isocyanurate	>100
82206-0	hexamethylene-di-isocyanate	0.2

4. FIRST-AID MEASURES

General: Immediately remove any clothing soiled by the product. Use appropriate protective equipment when treating a contaminated person. Place contaminated clothing in a sealed bag for disposal. In case of irregular breathing or respiratory arrest provide artificial respiration.

Inhalation: Remove source of exposure or move person to fresh air and keep comfortable for breathing. Supply fresh air. Seek immediate medical advice.

After skin contact: Immediately wash with and soap and rinse thoroughly for at least 15 minutes. If skin irritation consult doctor.

Remove contaminated shoes and clothes and clean before reuse.

After eye contact: Protect unharmed eye. Rinse opened eye for 15 minutes under running water. Then consult a doctor. Remove contact lenses if worn.

After swallowing: Rinse out mouth. DO NOT GIVE ANYTHING TO DRINK. DO NOT induce vomiting; call for medical help immediately.

Most important symptoms and effects, both acute and delayed: No further relevant information available.

Danger: Skin contact may aggravate existing skin disease. Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema, or bronchitis.

Indications of any immediate medical attention and special treatment: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. Treat symptomatically. No specific antidote available.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Foam, powders, carbon dioxide, dry chemical.

Unsuitable Extinguishing Media: Water.

Special Hazards: Combustible. During combustion toxic vapors are released. Under fire conditions, corrosive fumes are emitted: oxides of nitrogen oxides of carbon. Reacts with water releasing large amount of carbon dioxide which may cause pressure build-up in confined spaces.

Fire-fighting Procedures: Isolate immediate hazard area and keep unauthorized personnel out. Stay upwind. Do not breathe fumes. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. ENSURE THAT THERE IS NO DIRECT CONTACT BETWEEN THE WATER AND THE PRODUCT.

Special Protective Actions: Wear NIOSH approved self-contained breathing apparatus in positive pressure mode with full-face piece. Boots, gloves (neoprene), goggles, and full protective clothing are also required.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Remove persons from danger area and stay upwind. Do not breathe gas. Avoid any direct contact with the product. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Wear fully protective suit.

Environmental precautions: Contain spilled material by binding. Do not allow to enter sewers/surface or ground water.

Steps to be taken in case material is release or spilled: Pump the product into a spare container suitably labeled. Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders). Wash contaminated area with large amount of water. Recover the cleaning water for subsequent disposal. Dispose contaminated material as waste according to Item 13. Do not flush to drain. Spills may be reportable to the National Response Center and to state and/or local agencies.

Reference to other sections: See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

7. HANDLING AND STORAGE

Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace. Avoid contact with water or humidity. Avoid any direct contact with the product. Any measure to eliminate exposure should be considered. Very high level of containment required, except for short-term exposures e.g. taking samples (industrial use condition). Comply with instructions for use (refer to technical sheet). Keep ignition sources away. Do not smoke.

Conditions for safe storage, including any incompatibilities: The floor of the depot should be impermeable and designed to form a water-tight basin. Store in cool, dry conditions in well-sealed receptacles. Store in well-ventilated area. Store away from incompatible materials.

Requirements to be met by storerooms and receptacles: Suitable material for receptacle and pipe: epoxy-coated steel. Unsuitable materials for receptacle: Polystyrene. Store only in unopened original receptacles: metallic drums, storage tank with a dry nitrogen blanket. Packaging materials recommended: aluminum or steel. Unsuitable materials for receptacle: copper or tin.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Ingredients with Limit Values that Require Monitoring at the Workplace: The recommended limits SHOULD NOT be exceeded. Exposure limits represent regulated or recommended worker breathing zone concentrations measured by validated sampling and analytical methods, meeting the regulatory requirements. The following limits apply to this material, where, if indicated, S skin and C ceiling limit:

822-06-0 hexamethylene-di-isocyanate	
REL	Short-term value: C 0.14 mg/m , C 0.02 ppm Long-term value: 0.035 mg/m , 0.005 ppm 10-min
TLV	0.034 mg/m , 0.005 ppm
28182-81-2 Hexamethylene diisocyanate oligomers, Isocyanurate	
C	1 mg/m
TLV (Threshold Limit Value established by ACGIH)	
822-06-0 hexamethylene-di-isocyanate	
NIOSH-Ca (National Institute for Occupational Safety and Health)	
822-06-0 hexamethylene-di-isocyanate	

General Protective and Hygienic Measures: Ensure good ventilation of the workstation. Safety shower. Eye wash. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Store protective clothing separately. Shower or bathe at end of work.

Eye Protection: Wear eye protection with side shields or goggles. Wear indirect-vent, impact, and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

Skin Protection: Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene, or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g., frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

Respiratory Protection: If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed. Check with respiratory protective equipment suppliers. When airborne concentrations exceed or are expected to exceed the TLV, use MSHA/NIOSH approved positive pressure supplied air respirator with a full-face piece or an air supplied hood. For emergencies, use a positive pressure self-contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

Density at 25°C (77°F): 1.16 g/cm (9.68 lbs/gal)

Color: Colorless to pale yellow

pH: Not applicable (reacts with water)

Solubility with Ketones: Soluble

Solubility with esters: Soluble

Appearance: Liquid

Odor: Odorless

Water Solubility: Reacts

Solubility with aromatic hydrocarbons: Soluble

Oxidizing properties: Not oxidizing

Flash Point: 137°C (279°F)

Spontaneous Ignition Temp: 460°C (860°F)

Viscosity: Not determined

Boiling Point/Range: 203°C (397°F) at 1 mmHg

Coefficient (n-octanol/water): Not applicable (reacts with water and/or octanol)

Flammability Class: Will burn

Danger of Explosion: Not explosive

Melting Point/Range: 220°C (428°F) at 1.33hPa

Dynamic at 25°C (77°F): 1200 mPas

10. STABILITY AND REACTIVITY

Chemical stability

Thermal Decomposition / conditions to be avoided: Stable at ambient temperature.

Possibility of hazardous reactions: Reacts with alcohols, amines, bases, protic solvents, water, and aqueous solutions. Reacts with a great release of CO₂, and hence a risk of a pressure build-up in confined areas and forms an insoluble solid precipitate. Reacts with strong acids and strong oxidizing agents.

Conditions to avoid: Extreme heat, open flame moisture, and ignition sources.

Incompatible materials: No further relevant information available.

Hazardous decomposition products: On thermal decomposition (pyrolysis) releases: toxic gases, carbon dioxide, nitrogen oxides, and oxides of carbon.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD/LC50 values: Harmful by inhalation. To comply with regulatory guidelines, the substance was tested in a form (i.e. specific particle size distribution) that is different from the form in which the substance is placed on the market and in which it can reasonably be expected to be used. The acute inhalation toxicity of the substance is due to its local action on the distal part of the respiratory tract. As, in the conditions in which the product can reasonably be expected to be used, only a small fraction of the aerosols formed may reach this part of the respiratory tract, a correction has been made to take this difference into consideration. Based on our Expert judgement, the classification Acute inhalation toxicity category 4 is justified. Not harmful by skin contact. Not harmful if swallowed.

28182-81-2 Hexamethylene diisocyanate oligomers, Isocyanurate

Oral	LD0	2500 mg/kg (rat) (OECD 423 (female))
Dermal	LD0	2000 mg/kg (rabbit) (OECD 402)
		2000 mg/kg (rat) (OECD 402)
Inhalative	LC50/4h	0.390 mg/l (rat) (OECD 403 (female))

822-06-0 hexamethylene-di-isocyanate

Oral	LD50	746 mg/kg (rat) (OECD 401)
Dermal	LD50	7000 mg/kg (rat) (OECD 402)
Inhalative	LC50/4h	0.124 mg/l (rat) (OECD 403)

Primary irritant effect:

on the skin: Not classified as irritating to skin. (OECD 404) (rabbit)

on the eye: Not classified as irritating to eyes (OECD 405) (rabbit)

Inhalation: May cause respiratory irritation.

28182-81-2 Hexamethylene diisocyanate oligomers, Isocyanurate
Inhalative NOAEC/6h 3 mg/m (rat) ((OECD TG 403) (TRGS))
Additional toxicological information: Carcinogenic categories
OSHA-Ca (Occupational Safety & Health Administration)
Not listed.
Sensitization May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause sensitization by skin contact. Carcinogenicity: Not considered to be carcinogen.
822-06-0 hexamethylene-di-isocyanate
Inhalative NOAEC Carc) 0.164 ppm (rat) (OECD 453)
Mutagenicity: Is not considered genotoxic. Reproductive toxicity: Is not considered hazardous to the reproduction.
822-06-0 hexamethylene-di-isocyanate
Inhalative NOAEC Dvlp/Tera Tox 0.3 ppm (rat) (OECD 414) NOAEC Maternal Tox 0.005 ppm (rat) (OECD 414) NOEC Fert 0.3 ppm (rat) (OECD 422)

12. ECOLOGICAL INFORMATION (non-mandatory)

Toxicity

Aquatic toxicity: This product does not have any adverse effects on the aquatic organisms tested

28182-81-2 Hexamethylene diisocyanate oligomers, Isocyanurate
EC10/72h (static) 370 mg/l (Desmodesmus subspicatus) (EU C.3)EL50/48h (static) 127 mg/l (Daphnia magna) (EU C.2) ErC50(0-72h) (static) 1000 mg/l (Desmodesmus subspicatus) (EU C.3)LL0/96h 82.8 mg/l (Brachydanio rerio) (EU C.1)
822-06-0 hexamethylene-di-isocyanate
EC0/48h (static) 89.1 mg/l (Daphnia magna) (EU C.2) ErC50(0-72h) (static) 77.4 mg/l (Desmodesmus subspicatus) (EU C.3)LC0/96h (static) 82.8 mg/l (Brachydanio rerio) (EU C.1) NOEC/72h (static) 11.7 mg/l (Desmodesmus subspicatus) (EU C.3)
Persistence and degradability: The product is not readily biodegradable.
28182-81-2 Hexamethylene diisocyanate oligomers, Isocyanurate
BOD28 1 (bacteria) ((EU C.4-E) (Unpublished report)) DT50 3 h (Photolysis) ((25 C) (AOPWIN v1.92) (Internal evaluation)) 7.7 h (Hydrolysis) ((23 C) (ASTM D4666) (Internal evaluation))
822-06-0 hexamethylene-di-isocyanate
BOD28 42 (bacteria) (EU C.4-D) DT50 25 C, 48.44 h (Photolysis) (AOPWIN v1.92) 23 C, 0.23 h (Hydrolysis) (ASTM D4666)

Behavior in environmental systems:**Components:** No information available.**Bioaccumulative potential:** Not potentially bioaccumulable. Log Pow, see section 9.

28182-81-2 Hexamethylene diisocyanate oligomers, Isocyanurate
BCF 3.2 (fish) (BCFWIN v. 2.17)
822-06-0 hexamethylene-di-isocyanate
BCF 3.2 (fish) (BCFWIN v. 2.17)

Mobility in soil No further relevant information available.

28182-81-2 Hexamethylene diisocyanate oligomers, Isocyanurate
Log Koc 7.8 (.) (PCKOC v1.66)
822-06-0 hexamethylene-di-isocyanate
EC50/3h (static) 842 mg/l (bacteria) (OECD 209)

Other information: Formation of insoluble polyurea and/or amine derivative.**Ecotoxicological effects:****Behavior in sewage processing plants:**

28182-81-2 Hexamethylene diisocyanate oligomers, Isocyanurate
EC50/3h (static) 3828 mg/l (activated sludge) (OECD 209)
822-06-0 hexamethylene-di-isocyanate
EC50/3h (static) 842 mg/l (bacteria) (OECD 209)

Results of PBT and vPvB assessment**PBT:** No**vPvB:** No**Other adverse effects:** No further relevant information available.**13. DISPOSAL CONSIDERATIONS (non-mandatory)****Waste Disposal:** Discharging waste into rivers and drains is forbidden. Incinerate at a licensed installation.

Disposal must be made according to federal, state, and local regulations.

Uncleaned packaging: Disposal must be made according to official regulations.**14. TRANSPORT INFORMATION (non-mandatory)****UN-Number (DOT, ADR, ADN, IMDG, IATA):** Not regulated**UN-Proper Shipping Name (DOT, IMDG, IATA):** Not regulated**Transportation Hazard Classes (DOT, ADN, ADR, IMDG, IATA):** Not regulated**Packing Group (DOT, ADR, IMDG, IATA):** None**Environmental hazards:** Not applicable**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable**Additional information:** The above regulatory prescriptions are those valid on the date of publication of this sheet. However, given the possible evolution of transport regulations for hazardous materials and in the event of the SDS in your possession dating back more than 12 months, it is advisable to check their validity with your sales office.

15. REGULATORY INFORMATION (non-mandatory)

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

North American

SARA 312

Fire Hazard: No

Reactive Hazard: Yes

Release of Pressure: No

Acute Health Hazard: Yes

Chronic Health Hazard: Yes

SARA Section 313 (Specific toxic chemical listings):

CERCLAR 100 lbs for 822-06-0 hexamethylene-di-isocyanate

SARA Section 355 (Extremely hazardous substances): None of the ingredients is listed.

TSCA (Toxic Substances Control Act): Inventory: No components exist in this product.

Carcinogenic Categories

EPA (Environmental Protection Agency): Not listed.

IARC (International Agency for Research on Cancer): Not listed.

NTP (National Toxicology Program): Not listed.

Proposition 65 (California)

Chemicals known to cause cancer: Not listed.

Chemicals known to cause reproductive toxicity for females: Not listed.

Chemicals known to cause reproductive toxicity for males: Not listed.

Chemicals known to cause developmental toxicity: Not listed.

Canadian Domestic Substance List (DSL): All ingredients are listed.

Canadian Non-Domestic Substance List (NDSL): Not listed.

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

European EINECS/ELINS Listing: All ingredients are listed.

Chinese Chemical Inventory of Existing Chemical Substances (CIECS): All ingredients are listed.

Japan Existing and New Chemical Substances List (ENCS): All ingredients are listed.

Korea Existing Chemical Inventory (KECI): All ingredients are listed.

Philippines Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

TSCS listing: All ingredients are listed.

16. OTHER INFORMATION

This information provided on this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. The information given is designated only as a guide for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.