


TYFO® HCR, COMPONENT A
Section 1. Product and Company Identification

Product Name: Tyfo® HCR, Component A
Supplier: FyfeFRP LLC | 621 Lockhaven Drive. Houston, TX 77073 | +1 281.590.8491
Emergency Phone Number: 800.424.9300 (CHEMTREC)
 +1 703.741.5970 (Outside the US)
Product Description: Epoxy resin
Product Use: For professional use only

Section 2. Hazards Identification
Classification of the substance or mixture

Skin Corrosion/irritation – Category 2
 Eye damage/irritation – Category 2
 Sensitization/skin – Category 1
 Germ cell mutagenicity – Category 2
 Carcinogenicity – Category 2
 Aquatic Chronic – Category 2

Label Elements:

Hazard Statement(s):

H315 Causes skin irritation
 H317 May cause an allergic skin reaction
 H319 Causes serious eye irritation
 H341 Suspected of causing genetic defects
 H351 May cause cancer
 H411 Toxic to aquatic life with long lasting effects

Signal Word: Danger

Precautionary Statement(s):

P201 - Obtain special instructions before use
 P202 - Do not handle until all safety precautions have been read and understood
 P261 - Avoid breathing vapors
 P264 - Wash hands thoroughly after handling
 P271 - Use only outdoors or in a well-ventilated area
 P272 - Contaminated work clothing must not be allowed out of the workplace
 P280 - Wear eye protection, protective clothing, protective gloves
 P302+P352 - If on skin: Wash with plenty of water
 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
P308+P313 - If exposed or concerned: Get medical advice/attention
P312 - Call a doctor if you feel unwell
P332+P313 - If skin irritation occurs: Get medical advice/attention
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
P337+P313 - If eye irritation persists: Get medical advice/attention
P362+P364 - Take off contaminated clothing and wash it before reuse
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 in accordance with local, regional, national and/or international regulation

Section 3. Composition/ Information on Ingredients

Chemical Name	CAS-No	Weight %
Bisphenol A - Epoxy Resin	25068-38-6	50 – 70
2,3-epoxypropyl o-tolyl ether	2210-79-9	3 – 20
Titanium Dioxide	13463-67-7	3 – 20

Section 4. First Aid Measures

First Aid Measures for Accidental:

General: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital

Inhalation: Remove person to fresh air and keep comfortable for breathing. Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

Ingestion: Rinse mouth with water. Do not induce vomiting. Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Call a poison center/doctor/physician if you feel unwell.

Eye contact: Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Skin contact: Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists. Wash skin with plenty of water. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.

Most important symptoms/effects, acute and delayed:

Symptoms/injuries after inhalation: ON HEATING: Coughing. Slight irritation.

Symptoms/injuries after skin contact: Tingling/irritation of the skin.

Symptoms/injuries after eye contact: Irritation of the eye tissue. Redness of the eye tissue. Lacrimation. Eye irritation.



Symptoms/injuries after ingestion: No effects known.

Chronic symptoms: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Runny nose. Respiratory difficulties.

Indication of immediate medical attention and special treatment needed: Treat symptomatically.

Section 5. Fire Fighting Measures

Suitable Extinguishing Media: Water spray. Polyvalent foam. Carbon dioxide. BC powder. Sand/earth.

Unsuitable Extinguishing Media: Solid water jet ineffective as extinguishing medium.

Advice for Fire-fighters:

Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighborhood close doors and windows.

Firefighting instructions: Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Take account of environmentally hazardous firefighting water. Use water moderately and if possible, collect or contain it.

Protection during firefighting: Heat/fire exposure: compressed air/oxygen apparatus.

Specific Hazards Arising from the substance or mixture:

DIRECT FIRE HAZARD: Not easily combustible.

INDIRECT FIRE HAZARD: Temperature above flashpoint: higher fire/explosion hazard. Reactions involving a fire hazard: see "Reactivity Hazard".

Polymerizes on exposure to temperature rise. Upon combustion: CO and CO₂ are formed. Reacts violently with (strong) oxidizers: (increased) risk of fire/explosion. Violent exothermic reaction with (some) acids/bases. May polymerize on exposure to amines: pressure rise and possible bursting of container.

Section 6. Accidental Release Measures

Personal Precautions, Protective Equipment, and Emergency Procedures: Wear Gloves. Face-shield. Protective clothing. Mark the danger area. No naked flames. Wash contaminated clothes. In case of reactivity hazard: consider evacuation.

Environmental Precautions: Avoid release to the environment.

Methods and Materials for Containment and Cleaning Up: Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill.

For cleaning up: Take up liquid spill into absorbent material. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Clean contaminated surfaces with a soap solution. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

Section 7. Handling and Storage

Precautions for safe handling: Comply with the legal requirements. Remove contaminated clothing immediately. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Keep away from naked flames/heat. Finely divided: spark- and explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Observe very strict hygiene - avoid contact. Keep container tightly closed. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.



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Hygiene measures: Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

Conditions for safe storage including any incompatibilities: Store in a well-ventilated place. Keep cool. Keep substance away from heat sources.

Prohibitions on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. amines. (strong) bases.

Storage area: Store in a cool area. Keep out of direct sunlight. Keep container in a well-ventilated place. Keep only in the original container.

Special rules on packaging: SPECIAL REQUIREMENTS: closing. clean. correctly labelled. meet the legal requirements.

Packaging materials : SUITABLE MATERIAL: No data available. MATERIAL TO AVOID: No data available.

Section 8. Exposure Controls / Personal Protection

Control Parameters (Exposure Limits):

Chemical Name	ACGIH- TWA (mg/m ³)	OSHA PEL- TWA (mg/m ³)
Titanium Dioxide	10 mg/m ³ (TWA) exposure limit 8 h (TLV)	15 mg/m ³

Appropriate Engineering Control: Ensure good ventilation of the work station.

Personal Protective Equipment:

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

Eye / Face Protection: Wear chemical safety goggles

Skin Protection: Wear suitable protective clothing.

Environmental exposure controls: Avoid release to the environment.

Section 9. Physical and Chemical Properties

Physical state:	Liquid
Color:	Gray
Odor:	Mild
Odor threshold:	No data available
pH:	No data available
Melting point:	No data available
Freezing point:	No data available
Boiling point:	No data available
Flash point:	Closed cup
Relative evaporation rate (butyl acetate=1):	No data available
Flammability (solid, gas):	No data available
Explosion limits:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available
Vapor pressure:	No data available
Relative density:	1.2 (25 °C)



Relative vapor density at 20 °C:	No data available
Solubility:	Insoluble
Log Pow:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available

Section 10. Stability and Reactivity

Reactivity: Polymerizes on exposure to temperature rise. Upon combustion: CO and CO₂ are formed. Reacts violently with (strong) oxidizers: (increased) risk of fire/explosion. Violent exothermic reaction with (some) acids/bases. May polymerize on exposure to amines: pressure rise and possible bursting of container.

Chemical Stability: Stable under normal conditions.

Possibility of Hazardous reactions: No dangerous reactions known under normal conditions of use.

Conditions to Avoid: None under recommended storage and handling conditions (see section 7).

Incompatible Materials / Chemicals: No additional information available.

Hazardous Decomposition Products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological Information

Information on toxicological effects:

Acute toxicity: Not classified

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LD50 oral rat: > 2000 mg/kg (Rat; OECD 420: Acute Oral toxicity – Acute Toxic Class Method; Experimental value)

LD50 dermal rat: > 2000 mg/kg (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)

Epoxy Resin (25068-38-6)

LD50 oral rat: > 2000 mg/kg (Rat; OECD 420: Acute Oral toxicity – Acute Toxic Class Method; Experimental value)

LD50 dermal rat: > 2000 mg/kg (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)

Titanium Dioxide (13463-67-7)

LD50 oral rat: > 10000 mg/kg (Rat; OECD 425: Acute Oral Toxicity: Up-and-Down Procedure; Experimental value; > 5000 mg/kg bodyweight; Rat; Experimental value)

LD50 dermal rabbit: > 10000 mg/kg (Rabbit; Literature study)

LC50 inhalation rat (mg/l): > 6.8 mg/l/4h (Rat; Experimental value)

2,3-epoxypropyl o-tolyl ether (2210-79-9)

LD50 oral rat: > 5000 mg/kg (Rat)

LD50 dermal rat: > 2000 mg/kg (Rat)

LC50 inhalation rat (mg/l): 6.09 mg/l/4h (Rat)

ATE US (vapors): 6.090 mg/l/4h

ATE US (dust, mist): 6.090 mg/l/4h



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Titanium Dioxide (13463-67-7)

IARC group: 2B - Possibly carcinogenic to humans

Reproductive toxicity: Not classified

Specific target organ toxicity (single exposure): May cause respiratory irritation.

Specific target organ toxicity (repeated exposure): Not classified

Aspiration hazard: Not classified

Symptoms/injuries after inhalation: ON HEATING: Coughing. Slight irritation.

Symptoms/injuries after skin contact: Tingling/irritation of the skin.

Symptoms/injuries after eye contact: Irritation of the eye tissue. Redness of the eye tissue. Lacrimation. Eye irritation.

Symptoms/injuries after ingestion: No effects known.

Chronic symptoms: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Runny nose. Respiratory difficulties.

Section 12. Ecological Information

Ecotoxicity: Dangerous for the environment. Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.5/I. Toxic to fishes. Toxic to invertebrates (Daphnia). Toxic to algae. Inhibition of activated sludge.

Toxicity:

Ingredients	LC50 Fish	EC50 Daphnia
Tyfo® HCR, Component A	2.3 mg/l (LC50; OECD 203: Fish, Acute Toxicity Test; 96 h; Oncorhynchus mykiss; Semi-static system; Fresh water; Experimental value)	1.1 - 2.8 mg/l (EC50; Equivalent or similar to OECD 202; 48 h; Daphnia magna; Static system; Fresh water; Experimental value)
Epoxy Resin (25068-38-6)	2.3 mg/l (LC50; OECD 203: Fish, Acute Toxicity Test; 96 h; Oncorhynchus mykiss; Semi-static system; Fresh water; Experimental value)	1.1 - 2.8 mg/l (EC50; Equivalent or similar to OECD 202; 48 h; Daphnia magna; Static system; Fresh water; Experimental value)
Titanium Dioxide (13463-67-7)	Algae: 61 mg/l (EC50; Other; 72 h; Pseudokirchneriella subcapitata; Static system; Fresh water; Experimental value)	> 100 mg/l (LC50; Equivalent or similar to OECD 202; 48 h; Daphnia magna; Static system; Fresh water; Weight of evidence)
2,3-epoxypropyl o-tolyl ether (2210-79-9)	10 mg/l (LC50)	10 mg/l (EC50)

Persistence and degradability: Not readily biodegradable in water. Hydrolysis in water. Low potential for adsorption in soil.

Bioaccumulative potential:

BCF other aquatic organisms: 3 - 31 (BCF)

Bioaccumulative potential: Low potential for bioaccumulation (BCF < 500).

Mobility in soil:



Surface tension: 0.0 587-0.0589,20 °C

Log Koc: log Koc, SRC PCKOCWIN v2.0; 2.65; QSAR

Other adverse effects: No known ecological damage caused by this product.

Section 13. Disposal Considerations

Waste treatment methods: Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Uncleaned packaging: Do not re-use empty containers for food, clothing, or products for human or animal consumption, or where skin contact can occur. Dispose of container and unused contents in accordance with federal, state, and local regulations.

Section 14. Transport Information

US DOT:

Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s. (Bisphenol A - Epoxy Resin)

UN number: UN3082

Hazard Class: 9

Packing Group: III

DOT Packaging Non Bulk (49 CFR 173.xxx): 203

DOT Packaging Bulk (49 CFR 173.xxx): 241

DOT Symbols: G - Identifies PSN requiring a technical name

DOT Packaging Exceptions (49 CFR 173.xxx): 155

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27): No limit

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75): No limit

DOT Vessel Stowage Location: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

IMDG

Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s. (Bisphenol A - Epoxy Resin)

UN number: UN3082

Hazard Class: 9

Packing Group: III

Marine pollutant: Yes

EmS-No: F-A, S-F

IATA

Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s. (Bisphenol A - Epoxy Resin)

UN number: UN3082

Hazard Class: 9

Packing Group: III

Section 15. Regulatory Information

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

Federal Regulations:

Epoxy Resin (25068-38-6)



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Listed on the United States TSCA (Toxic Substances Control Act) inventory
EPA TSCA Regulatory Flag XU - XU - indicates a substance exempt from reporting under the Inventory Update Reporting
Rule, i.e., Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(C)).

Titanium Dioxide (13463-67-7): Listed on the United States TSCA (Toxic Substances Control Act) inventory
2,3-epoxypropyl o-tolyl ether (2210-79-9): Listed on the United States TSCA inventory

International regulations

Canada: No additional information available

EU-Regulations: No additional information available

National regulations

Titanium Dioxide (13463-67-7): Listed on IARC (International Agency for Research on Cancer)

US State regulations

Titanium Dioxide (13463-67-7): U.S. - New Jersey - Right to Know Hazardous Substance List

Section 16. Other Information**NFPA Rating:**

Health – 2

Fire Hazard – 1

Reactivity – 2

HMIS Rating:

Health – 2

Flammability – 1

Physical – 2

Key Legend Information:

CAS: Chemical Abstracts Service

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

IMDG: International Maritime Dangerous Goods

NIOSH: National Institute for Occupational Safety and Health

OSHA: Occupational Safety and Health Administration

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Date of issue: 03.26.2020

Revision date: 01.22.2022

Version: 2.0



SAFETY DATA SHEET

TYFO® HCR, COMPONENT A