

**Section 1. Product and Company Identification**

Product Name: Tyfo® S-T, Part B
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: Hardener solution
Product Use: For professional use only

Section 2. Hazards Identification**Classification of the substance or mixture**

Skin Corrosion/irritation – Category 1C

Eye damage/irritation – Category 1

Aquatic Chronic – Category 3

Label Elements:**Hazard Statement(s):**

H314 Causes severe skin burns and eye damage

H318 Causes serious eye damage

H412 Harmful to aquatic life with long lasting effects

Signal Word: Danger**Precautionary Statement(s):**

P260 - Do not breathe mist, spray, vapors.

P264 - Wash hands thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P273 - Avoid release to the environment.

P280 - Wear eye protection, protective gloves, protective clothing.

P302+P352 - If on skin: Wash with plenty of soap and water

P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P312 - Call a doctor if you feel unwell

P363 - Wash contaminated clothing before reuse.

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 %
Polyoxypropylenediamine	9046-10-0	65 – 90
Isophorone diamine	2855-13-2	15 – 20
3-Glycidyoxypropyltrimethoxysilane	2530-83-8	1 – 10

Section 4. First Aid Measures**First Aid Measures for Accidental:**

General: Call a physician immediately. Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.

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.

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.

Skin contact: Remove/Take off immediately all contaminated clothing. Immediately flush skin with plenty of water for at least 60 minutes. Immediately call a poison center or doctor/physician. Wash contaminated clothing before reuse.

Most important symptoms/effects, acute and delayed:

Symptoms/injuries after inhalation: May cause respiratory irritation.

Symptoms/injuries after skin contact: Burns.

Symptoms/injuries after eye contact: Serious damage to eyes.

Symptoms/injuries after ingestion: Burns.

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

Section 5. Fire Fighting Measures

Suitable Extinguishing Media: Alcohol foam. Dry chemical. Water spray. Carbon dioxide. Use extinguishing media appropriate for surrounding fire. Dry powder. Foam

Unsuitable Extinguishing Media: No unsuitable extinguishing media known.

Advice for Fire-fighters:

Firefighting instructions: Exercise caution when fighting any chemical fire

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

Specific Hazards Arising from the substance or mixture:

Fire hazard: Not flammable.

Explosion hazard: Product is not explosive.

Reactivity: Thermal decomposition generates: Corrosive vapors.



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.

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.

Incompatible products: Strong acids. Oxidizing agent

Section 8. Exposure Controls / Personal Protection

Control Parameters (Exposure Limits): Contains no substances with occupational exposure limit values.

Appropriate Engineering Control: Ensure good ventilation of the workstation.

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 glasses.

Skin Protection: Wear suitable protective clothing. Wear gloves

Environmental exposure controls: Avoid release to the environment.

**Section 9. Physical and Chemical Properties**

Physical state:	Liquid
Color:	Colorless to Amber
Odor:	There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure. Mixture contains one or more component(s) which have the following odour(s): Ammonia odour
Odor threshold:	No data available
pH:	<=11.7
Melting point:	Not applicable
Freezing point:	No data available
Boiling point:	260 °C (500 °F)
Flash point:	121 - 163 °C °C, PMCC (249.8-325.4 °F)
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:	No data available
Relative vapor density at 20 °C:	No data available
Specific Gravity / density:	No data available
Solubility:	No data available
Log Pow:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity, dynamic:	No data available
Explosion limits:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available

Section 10. Stability and Reactivity

Reactivity: Thermal decomposition generates: Corrosive vapors.

Chemical Stability: Stable under normal conditions.

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

Conditions to Avoid: Direct sunlight. Extremely high or low temperatures

Incompatible Materials / Chemicals: Acids.

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: Oral: Harmful if swallowed. Dermal: Harmful in contact with skin.

**Tyfo® S, Part B**

ATE US (oral): 1,063.8 mg/kg body weight
ATE US (dermal) 1,286.8 mg/kg body weight

Polyoxypropylenediamine

LD50 oral: 1,100 mg/kg (Rat)
LD50 dermal: 1,550 mg/kg (Rabbit)
ATE US (oral): 1,100 mg/kg body weight
ATE US (dermal): 1,550 mg/kg body weight

3-Glycidyloxypropyltrimethoxysilane

LD50 oral: 8,025 mg/kg body weight (Rat; Equivalent or similar to OECD 401; Experimental value)
LD50 dermal: 4,250 mg/kg body weight (Rabbit; Experimental value; Equivalent or similar to OECD 402)
ATE US (oral): 8,025 mg/kg body weight
ATE US (dermal): 4,250 mg/kg body weight

Isophorone diamine

LD50 oral: 1,030 mg/kg (Rat; Equivalent or similar to OECD 401; Experimental value)
LD50 dermal: > 2,000 mg/kg body weight (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)
LC50 inhalation: > 5.01 mg/l/4h (Rat; Experimental value)
ATE US (oral): 1,030 mg/kg body weight
ATE US (dermal): 1,100 mg/kg body weight

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

Serious eye damage/irritation: Not classified

Respiratory or skin sensitization: Not classified

Germ cell mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive toxicity: Not classified

Specific target organ toxicity – single exposure: Not classified

Specific target organ toxicity – repeated exposure: Not classified

Aspiration hazard: Not classified

Symptoms/injuries after skin contact: Burns

Symptoms/injuries after eye contact: Serious damage to eyes.

Symptoms/injuries after ingestion: Burns

Chronic symptoms: None known.

Section 12. Ecological Information

Ecotoxicity: Toxic to aquatic life with long lasting effects.

Toxicity:

Ingredients	LC50 Fish	EC50 Daphnia	Threshold limit algae
Polyoxypropylenediamine	>100 mg/l (LC50; 96h)	15 mg/l (EC50; 48 h)	135 mg/l (EC50; 72 h)



3-Glycidyoxypropyltrimethoxysilane	- 55 mg/l (LC50; EU Method C.1; 96 h; Cyprinus carpio; Semi-static system; Fresh water; Experimental value) - 237 mg/l (LC50; 96 h; Salmo gairdneri; Static system)	- < 250 mg/l (NOEC; US EPA; 48 h; Simocephalus vetulus; Static system; Fresh water. - 324 mg/l (LC50; US EPA; 48 h; Simocephalus vetulus; Static system; Fresh water;	- 119 mg/l (EC50; US EPA; 7 days; Anabaena flosaquae; Static system; Fresh water. - 250 mg/l (EbC50; 72 h; Selenastrum capricornutum)
Isophorone diamine	110 mg/l (LC50; EU Method C.1; 96 h; Leuciscus idus; Semi-static system; Fresh water. Experimental value)	-	-

Persistence and degradability: Not readily biodegradable in water.

Bioaccumulative potential:

Polyoxypropylenediamine: Not bioaccumulative.

3-Glycidyoxypropyltrimethoxysilane: Not bioaccumulative.

Isophorone diamine: Low potential for bioaccumulation.

Mobility in soil: No additional information available

Other adverse effects: No known effects from 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. Avoid release to the environment

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: Amines, liquid, corrosive, n.o.s. (Polyoxypropylenediamine)

UN number: UN2735

Hazard Class: 8

Packing Group: II

DOT Packaging Non Bulk (49 CFR 173.xxx): 202

DOT Packaging Bulk (49 CFR 173.xxx): 242

DOT Symbols: G - Identifies PSN requiring a technical name

DOT Packaging Exceptions (49 CFR 173.xxx): 154

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27): 1L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75): 30L



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

DOT Vessel Stowage Other: 52 - Stow “separated from” acids

Emergency Response Guide (ERG) Number: 153

IMDG

Proper Shipping Name: Amines, liquid, corrosive, n.o.s. (Polyoxypropylenediamine)

UN number: UN2735

Hazard Class: 8

Packing Group: II

Limited quantities (IMDG): 1 L

IATA

Proper Shipping Name: Amines, liquid, corrosive, n.o.s. (Polyoxypropylenediamine)

UN number: UN2735

Hazard Class: 8

Packing Group: II

Section 15. Regulatory Information

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

Federal Regulations:

The ingredients are listed on the United States TSCA (Toxic Substances Control Act) inventory

International regulations

Canada: No additional information available

EU-Regulations: No additional information available

National regulations: No additional information available

US State regulations: No additional information available

Section 16. Other Information

NFPA Rating:

Health – 3

Fire Hazard – 1

Reactivity – 0

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

The information contained herein is based on the data available to us and is believed to be accurate. The data is offered in good faith as typical values and not as product specification. The information in this data sheet was compiled from information



SAFETY DATA SHEET

TYFO® S-T, PART B

supplied by the vendors of the components of this compound. Fyfe Co., LLC makes no warranty either expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. The recommended industrial hygiene and safe handling procedures are believed to be genuinely applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate. Fyfe Co., LLC assumes no responsibility for injury from the use of the product described herein. The information is intended only to assist in the safe handling of this material. FYFE Co., LLC DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR FREEDOM FROM PATENT INFRINGEMENT. FYFE Co., LLC WILL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Date of issue: 12.17.2018

Revision date: 01.19.2022

Version: 2.0