

Section 1. Product and Company Identification

Product Name: Tyfo® TC, Part B
Supplier: Fyfe, 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**

Acute Toxicity / oral – Category 4
Acute Toxicity / dermal – Category 4
Skin Corrosion/irritation – Category 1B
Skin Sensitization – Category 1
Eye damage/irritation – Category 1
Sensitization / respiratory – Category 1
Reproductive toxicity – Category 2
Aquatic Chronic – Category 3

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

H302 Harmful if swallowed
H312 Harmful in contact with skin
H314 Causes severe skin burns and eye damage
H317 May cause an allergic skin reaction
H318 Causes serious eye damage
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
H412 Harmful to aquatic life with long lasting effects

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

P260 - Do not breathe mist, spray, vapors
P261 - Avoid breathing vapors
P264 - Wash hands thoroughly after handling
P272 - Contaminated work clothing must not be allowed out of the workplace
P273 - Avoid release to the environment
P280 - Wear eye protection, protective gloves, protective clothing
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting



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

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 POISON CENTER

P333+P313 - If skin irritation or rash occurs: Get medical advice/attention

P363 - Wash contaminated clothing before reuse

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 %
Polyoxypropylenediamine	9046-10-0	85 – 98
3-Glycidyoxypropyltrimethoxysilane	2530-83-8	1 – 5
Aminoethyl piperazine 1-2- (AEP)	140-31-8	0.2 – 0.7
Piperazine	110-85-0	0.1 – 0.5

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 an allergy or asthma symptoms or breathing difficulties if inhaled

Symptoms/injuries after skin contact: Burns. May cause an allergic skin reaction

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

**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.

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.

Section 8. Exposure Controls / Personal Protection**Control Parameters (Exposure Limits):**

Piperazine: 0.03 ppm; TWA, exposure limit 8 h; TLV - Adopted Value; Inhalable fraction and vapor.

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
Appearance:	Liquid
Color:	Mixture contains one or more component(s) which have the following colour(s): Light yellow Colourless
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 Ester smell Mild odour Smell of fish Irritating/pungent odour
Odor threshold:	No data available
pH:	<=11.6
Melting point:	Not applicable
Freezing point:	No data available
Boiling point:	> 260 °C (> 500 °F)
Flash point:	No data available
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: The product is non-reactive under normal conditions of use, storage and transport.

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.

Incompatible Materials / Chemicals: No additional information available.


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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.

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ATE US (oral): 1,157.9 mg/kg body weight
ATE US (dermal): 1,631.6 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

1-(2-Aminoethyl) piperazine, (AEP)

ATE US (oral): 500 mg/kg body weight
ATE US (dermal): 1,100 mg/kg body weight

Piperazine

LD50 oral: > 2000 mg/kg (Rat; Equivalent or similar to OECD 401; Experimental value; 2600 mg/kg bodyweight)
LD50 dermal: 4440 mg/kg (Rabbit; Literature study; Equivalent or similar to OECD 402; 8300 mg/kg Bodyweight; Experimental value) ATE US (dermal): 4,440 mg/kg body weight

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

Serious eye damage/irritation: Not classified

Respiratory or skin sensitization: May cause an allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.

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/effects after inhalation: May cause an allergy or asthma or breathing difficulties if inhaled.



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)

Persistence and degradability: Not readily biodegradable in water.

Bioaccumulative potential: Not bioaccumulative.

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.

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

SAFETY DATA SHEET



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NIOSH: National Institute for Occupational Safety and Health
OSHA: Occupational Safety and Health Administration

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