



TYFO® WP, PART B

Section 1. Product and Company Identification

Product Name: Tyfo® WP, 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

Acute Toxicity / oral – Category 4
Acute Toxicity / dermal – Category 4
Skin Corrosion/irritation – Category 1B
Skin Sensitization – 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
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 %
Triethylenetetramine	112-24-3	3 – 10
Aminoethyl piperazine 1-2- (AEP)	140-31-8	1 – 5
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 respiratory irritation.

Symptoms/injuries after skin contact: Burns.

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

Symptoms/injuries after ingestion: Burns.

Chronic symptoms : None known.

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.

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: Collect spillage. Take up liquid spill into absorbent material. Dispose of materials or solid residues at an authorized site.

Section 7. Handling and Storage

Precautions for safe handling: Ensure good ventilation of the work station. Do not breathe mist, spray, vapors. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin and eyes. Wear personal protective equipment.

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:

Storage conditions: Store in a dry place. Store in a closed container. Store in a well-ventilated place. Keep cool. Incompatible products: Strong acids. Oxidizing agent

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
Color:	Mixture contains one or more component(s) which have the following colour(s): Colourless to yellow Colourless to light yellow Colourless to white On exposure to air: turns dark yellow On exposure to light: turns dark yellow
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 Irritating /pungent odour Smell of fish Mild 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
VOC content:	0 % Tested per ASTM D2396-95 with Tyfo® S, Component A and Tyfo® S, Component B mixed together.

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: Strong 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:****Triethylenetetramine**

LD50 oral: 2500 mg/kg (Rat; Literature; 1716 mg/kg bodyweight)

LD50 dermal: 805 mg/kg (Rabbit; Literature; 1465 mg/kg bodyweight)

ATE US (oral): 2,500 mg/kg body weight

ATE US (dermal): 805 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 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/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
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SAFETY DATA SHEET

TYFO® WP, PART B

Triethylenetetramine	495 mg/l (LC50; 96 h; Pimephales promelas)	311 mg/l (EC50; Equivalent or similar to OECD 202; 48 h	>= 100 mg/l (ErC50; DIN 38412-9; 72 h; Scenedesmus subspicatus
Aminoethyl piperazine 1-2	> 100 mg/l (LC50; OECD 203: Fish, Acute Toxicity Test; 96 h; Oncorhynchus mykiss; Semistatic system; Fresh water; Experimental value	58 mg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna; Static system	> 1000 mg/l (EC50; OECD 201: Alga, Growth Inhibition Test; 72 h; Selenastrum capricornutum; Fresh water)
Piperazine	-	21 mg/l (EC50; EU Method C.2; 48 h; Daphnia magna; Static system; Fresh water; Experimental value)	> 1000 mg/l (NOEC; OECD 201: Alga, Growth Inhibition Test; 72 h; Pseudokirchneriella subcapitata; Static system; Fresh water; Experimental value)

Persistence and degradability:

Triethylenetetramine: Not readily biodegradable in water.

Aminoethyl piperazine 1-2: Not readily biodegradable in water.

Piperazine Readily biodegradable in water.

Bioaccumulative potential:

Triethylenetetramine: Bioaccumulation: not applicable.

Aminoethyl piperazine: Low potential for bioaccumulation (Log Kow < 4)

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

Mobility in soil:

Aminoethyl piperazine 1-2: log Koc,4.57; Read-across; GLP

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:

In accordance with DOT: Not regulated for transport

IMDG: No additional information available

IATA: No additional information available

**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:

WHMIS Classification:

Class E - Corrosive Material

Class D Division 1 Subdivision B - Toxic material causing immediate and serious toxic effects

EU-Regulations: No additional information available

National regulations: No additional information available

US State regulations:

U.S. - New Jersey - Right to Know Hazardous Substance List: Triethylenetetramine, Aminoethyl piperazine 1-2, Piperazine

Section 16. Other Information

HMIS Rating:

Health – 2

Flammability – 1

Physical – 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

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