

# MATERIAL SAFETY DATA SHEET

**MSDS IDENTIFICATION NAME:** TYFO® TC-1, Component A    **DATE:** April 6, 2010    **PAGE:** 1 OF 5  
**MSDS NUMBER:** TYFO-TC1A-001    **SUPERSEDES MSDS:** 3/3/09

## SECTION I: MATERIAL AND MANUFACTURER IDENTIFICATION

**MANUFACTURER:**  
 FYFE CO. LLC  
 8380 Miralani Drive, Suite A  
 San Diego, CA 92126

**EMERGENCY TELEPHONE NUMBER:**  
 800-424-9300 or 703-527-3887

**INFORMATION TELEPHONE NUMBER:**  
 858-642-0694

**PRODUCTION IDENTIFICATION NUMBER:** TYFO®TC-1, Component A  
**CHEMICAL FAMILY:** Epoxy Resin Mixture

## SECTION II: HAZARDOUS INGREDIENTS

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200).

MATERIAL OR COMPONENT	CAS NUMBER	% BY WEIGHT	OSHA(PEL)	ACGIH(TLV)
BIS A EPOXY RESIN	25068-38-6	>50%	N/E	N/E
BIS F EPOXY RESIN	28064-14-4	<15%	N/E	N/E
GLYCIDYL DILUENT	2461-15-6	<15%	N/E	N/E
TITANIUM DIOXIDE	13463-67-7	<10%	5 mg/m3	5 mg/m3
COLLOIDAL SILICA	67762-90-7	0 – 10%	N/E	N/E

N/E = NOT ESTABLISHED

## SECTION III: HAZARD IDENTIFICATION

### EMERGENCY OVERVIEW:

### STATEMENTS OF HAZARD:

**CAUTION ! MAY CAUSE SKIN AND EYE IRRITATION AND SKIN SENSITIZATION.**

**CONTACT AT ELEVATED TEMPERATURES CAN RESULT IN THERMAL BURNS.**

### PRIMARY ROUTES OF EXPOSURE:

EYES--YES                      SKIN CONTACT--YES                      INHALATION--YES                      INGESTION--NO

### HMIS RATING:

HEALTH--2                      FLAMMABILITY--1                      REACTIVITY--0                      SPECIAL--NONE

### POTENTIAL HEALTH EFFECTS:

**EYES:** Product may cause severe irritation.

**SKIN:** Product may cause irritation, redness and discomfort which is transient.

**INHALATION:** Vapors from product may cause irritation to the nose, throat, and respiratory tract. Coughing and chest pains may result. High vapor concentrations may produce CNS depression.

**INGESTION:** Not expected to be a relevant route of exposure. Product may be slightly toxic if ingested.

**CHRONIC:** Repeated exposure may cause skin sensitization, skin irritation, and dermatitis. Pre-existing eye, skin, and respiratory disorders may be aggravated by exposure of this product.

**SECTION IV: FIRST AID MEASURES**

**EYES:** In case of eye contact, immediately flush eyes with large amounts of water for at least 15 minutes, keeping the eyelids open, lifting upper and lower lids occasionally. Seek medical attention.

**SKIN CONTACT:** In case of contact, immediately wash skin with soap and plenty of water. Wash contaminated clothing before re-use and destroy contaminated shoes. If irritation occurs, seek medical attention.

**INHALATION:** If inhaled, remove to fresh air, If breathing has stopped, administer artificial respiration, preferably mouth-to-mouth. If breathing is difficult, qualified personnel may administer oxygen. Seek medical attention.

**INGESTION:** Ingestion of this material is unlikely. If swallowed, seek medical attention immediately. Do not induce vomiting.

**SECTION V: FIRE FIGHTING MEASURES**

**FLASH POINT/METHOD OF DETERMINATION:** >200°F / SETAFLASH

**AUTO-IGNITION TEMP:** Not available

**LIMITS OF FLAMMABILITY:** LEL: Not available      UEL: Not available

**MEANS OF EXTINCTION:** Use water-spray, foam, dry chemical or CO<sub>2</sub> to extinguish fires. Use water to keep containers cool.

**SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS:** Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves and rubber boots), including a positive pressure NIOSH approved self-contained breathing apparatus. Cool fire exposed containers with water.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure buildup which could result in container rupture.

**SECTION VI: ACCIDENTAL RELEASE MEASURES**

**PROCEDURES IN CASE OF ACCIDENTAL RELEASE OF LEAKAGE:** Clean up personnel must be equipped with self-contained breathing apparatus, rubber gloves and protective clothing. Dike and contain the spill. Soak up residue with an absorbent such as clay, sand or other suitable material. Dispose of the absorbent material in accordance with federal, state and local regulations. Residual resin may be removed with hot soapy water.

**WASTE DISPOSAL METHOD:** Dispose in compliance with federal, state and local regulations.

**SECTION VII: HANDLING AND STORAGE**

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** Store in a cool, dry place with adequate ventilation. Store in closed containers. Keep sealed from dirt and moisture. Keep away from open flames and high temperatures.

**SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**EYE/FACE PROTECTION:** Avoid eye and skin contact. Wear chemical type goggles and a faceshield.

**SKIN PROTECTION:** Protective clothing such as uniforms, coveralls or lab coats must be worn. Wear chemical resistant protective clothing, gloves, and boots. Launder or dry-clean when soiled. Gloves resistant to chemicals are required.

### SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION (CONTINUED)

**RESPIRATORY PROTECTION:** Avoid prolonged or repeated breathing of vapors. In confined spaces or areas with limited ventilation a NIOSH approved respirator is recommended to prevent overexposure. In accord with 29 cfr 1910.134, use a full face, air supplying respirator or an air-purifying respirator for organic vapors.

**VENTILATION:** Local exhaust ventilation recommended sufficient to control the vapor, mist or dust being generated. If exhaust ventilation is not available or is inadequate, use a NIOSH approved respirator, as appropriate.

**GENERAL HYGIENE RECOMMENDATIONS:** Before eating, drinking, smoking or using toilet facilities, wash face and hands thoroughly with soap and water. If significant amounts of this material gets on work clothes, the employee should shower immediately and the clothing should be laundered before it is worn again.

### SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

<b>APPEARANCE AND ODOR</b>	Clear liquid, slight odor
<b>BOILING POINT (°F/°C)</b>	N/AV
<b>FREEZING POINT (°F/°C)</b>	N/AV
<b>SPECIFIC GRAVITY ( WATER=1)</b>	1.13
<b>pH OF UNDILUTED PRODUCT</b>	N/AV
<b>VAPOR PRESSURE (MM Hg. @ 20C)</b>	<10
<b>VAPOR DENSITY (AIR-1)</b>	>Air
<b>VISCOSITY</b>	N/AV
<b>PERCENT (%) VOC</b>	0.1%
<b>SOLUBILITY IN WATER</b>	Negligible

N/AV = Not Available

### SECTION X: STABILITY AND REACTIVITY

**STABILITY:** Stable under normal handling and storage conditions.

**INCOMPATIBLE MATERIALS:** Avoid heat, flame and contact with strong oxidizing agents. Contamination with strong acids, bases, amines and mercaptans may cause an exothermic polymerization. Do not store or handle in aluminum equipment at temperatures above 120 °F

**PRODUCTS EVOLVED FROM HEAT OF COMBUSTION OR DECOMPOSITION:** The products of combustion and decomposition depend on other materials present in the fire and the actual conditions of the fire. Burning will produce carbon dioxide, carbon monoxide, aldehydes, acids, and other unidentified gases and vapors which may be toxic. Avoid inhalation.

**HAZARDOUS POYMERIZATIONS:** Will not occur under normal conditions of use.

### SECTION XI: TOXICOLOGICAL INFORMATION

**PRIMARY ROUTE OF ENTRY:** INHALATION, DERMAL, EYES

EFFECTS OF OVEREXPOSURE:

**INHALATION:** May cause irritation on the respiratory tract.

**LC(50) INHAL.:** N/AV

**EYES:** May be severely irritating to the eyes

**SKIN CONTACT** May be irritating to the skin. In some individuals it may cause sensitization.

**SKIN ABSORPTION:** No information available.

**INGESTION:** Not expected to be a relevant route of entry. May be slightly toxic if ingested.

### SECTION XI: TOXICOLOGICAL INFORMATION (CONTINUED)

**LD(50) ORAL:** CAS. NO.  
 25068-38-6: 11.4 g/kg (rat)  
 2461-15-6: 7.8 g/kg (rat)

**CHRONIC:** Product does not contain chemicals considered to be carcinogenic by NTP, IARC, or OSHA.

This product contains residual (<5ppm) quantities of epichlorohydrin (ECH) (CAS NO. 106-89-8). It is very unlikely that normal work practices with this product could result in measurable ECH concentrations in the workplace atmosphere. Nevertheless, you should be aware that ECH has been reported to produce cancer in laboratory animals and to produce mutagenic changes in bacteria and cultured human cells. It has been classified by IARC as a probable human carcinogen. It has been classified as an anticipated human carcinogen by NTP.

### SECTION XII: ECOLOGICAL INFORMATION

Marine Pollutant: NL  
 (NL = Not Listed; P = Moderate; PP = Severe; ND = Not Determined)

### SECTION XIII: DISPOSAL CONSIDERATIONS

**WASTE DISPOSAL METHODS:** Material for disposal should be placed in appropriate sealed containers to avoid potential human and environmental exposure. It is the responsibility of the generator to comply with all federal, state, provincial and local laws and regulations. We recommend that you contact an appropriate waste disposal contractor and environmental agency for relevant laws and regulations. Under the US, Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets relevant waste classification and to assure proper disposal.

### SECTION XIV: TRANSPORTATION INFORMATION

PROPER SHIPPING NAME	Not Regulated
HAZARD CLASS	Not Regulated
IDENTIFICATION NUMBER	Not Regulated
PACKING GROUP	Not Regulated
LABEL REQUIRED	None
EMERGENCY RESPONSE GUIDE	128

### SECTION XV: REGULATORY INFORMATION

**ALL MATERIALS OF COMPONENTS OF THIS PRODUCT ARE EITHER LISTED OR ARE NOT REQUIRED TO BE LISTED IN THE EPA /TSCA INVENTORY.**

**TITLE III SECTION 302:** No reportable materials.  
**TITLE III SECTION 311/312:** Health hazard: Immediate  
 Physical hazard: Fire  
**TITLE III SECTION 313:** No reportable materials.

**SECTION XVI: OTHER INFORMATION**

**SPECIAL PRECAUTIONS:** Empty containers will retain some of the product residue. When handling or disposing of them, follow all label warnings, other instructions and waste disposal procedures.

**EXPLANATION AND DISCLAIMER:** Wherever such words or phrases as "hazardous," "toxic," "carcinogen," etc. appear herein, they are used as defined or described under state employee right-to-know laws, Federal OSHA laws or the or the direct sources for these laws such as the International Agency for Research on Cancer (ISRC), the National Toxicology Program (NTP), etc. The use of such words or phrases should not be taken to mean that we deem or imply any substance or exposure to be toxic, hazardous or otherwise harmful. ANY EXPOSURE CAN ONLY BE UNDERSTOOD WITHIN THE ENTIRE CONTEXT OF ITS OCCURRENCE, WHICH INCLUDES SUCH FACTORS AS THE SUBSTANCE'S CHARACTERISTICS AS DEFINED IN THE MSDS, AMOUNT AND DURATION OF EXPOSURES, OTHER CHEMICALS PRESENT AND PREEXISTING INDIVIDUAL DIFFERENCES IN RESPONSE TO THE EXPOSURE.

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**APPROVED AND AUTHORIZED BY:** *Edward R. Fyfe*