

MATERIAL SAFETY DATA SHEET

MSDS IDENTIFICATION NAME: TYFO® WP, Component B **DATE:** Feb. 4, 2010 **PAGE:** 1 OF 5
MSDS NUMBER: TYFO-WPB-01 **SUPERSEDES MSDS:** Mar. 15, 2009

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® WP, Component B
CHEMICAL FAMILY: Polyamide

SECTION II: HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS NUMBER	% BY WEIGHT	OSHA(PEL)	ACGIH(TLV)
Proprietary component	Mixture	90-95 %	Not determined	Not determined
Triethylenetetramine	112-24-3	4-6 %	Not determined	Not determined
1-(2-Aminoethyl) piperazine, (AEP)	140-31-8	1-5 %		

SECTION III: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW:

Severe eye irritant
 May cause sensitization by skin contact.

APPEARANCE AND ODOR:

Amber liquid with an ammonia-like odor

PRIMARY ROUTES OF EXPOSURE:

EYES--Yes SKIN CONTACT--Yes INHALATION--Yes INGESTION--No

HMS RATING:

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

POTENTIAL HEALTH EFFECTS:

EYES: Causes severe eye irritation with pain. Product vapor in low concentrations can cause lacrimation, conjunctivitis and corneal edema when absorbed into the tissue of the eye from the atmosphere. Cornea edema may give rise to a perception of "blue haze" or "fog" around lights. The effects transient and has no known residual effect.

INHALATION: Move to fresh air.

INGESTION: Never give anything by mouth to an unconscious person. Prevent aspiration of vomit. Turn victim's head to the side.

SKIN: Take off contaminated clothing and shoes immediately.

NOTE TO PHYSICIANS: Application of corticosteroid cream has been effective in treating skin irritation.

SECTION III: HAZARD IDENTIFICATION (CONTINUED)

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Preexisting conditions such as asthma, allergies, eczema, bronchitis, and other lung and skin disorders may be aggravated by exposure to the product. Eye Skin disorders and Allergies.

OTHER: The components present in this material at concentrations equal to or greater than 0.1% are not listed or regulated by IARC, NTP, OSHA OR ACGIH as a carcinogen. Dust from machining the cured product may cause mechanical irritation of the eyes, skin, nose, throat and upper respiratory tract.

EXPOSURE LIMITS FOR CURED PRODUCT DUST:	OSHA(PEL)	ACGIH(TLV)	
	15 mg/m ³ (Total) 5 mg/ m ³ (Respirable)	10 mg/m ³ (Total)	3 mg/ m ³ (Respirable)
Triethylenetetramine	Time Weight Average (TWA): WEEL	1 PPM	6 mg/m ³

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. Get medical attention.

SKIN CONTACT: In case of contact, immediately wash skin with soap and plenty of water. Get medical attention if irritation develops. NOTE TO PHYSICIANS: Application of Corticosteroid cream has been effective in treating skin irritation.

INHALATION: If excessive inhalation of vapor occurs, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, qualified personnel may administer oxygen. Get medical attention.

INGESTION: If swallowed, get medical attention immediately. Do not induce vomiting.

SECTION V: FIRE FIGHTING MEASURES

FLASH POINT/METHOD OF DETERMINATION: 93.33°C/200°F.

MEANS OF EXTINCTION: Use alcohol-resistant foam, dry chemical or CO₂, dry sand or limestone powder.

SPECIFIC HAZARDS: Incomplete combustion may form carbon monoxide. May generate ammonia gas. May generate toxic nitrogen oxide gases. Burning produces noxious and toxic fumes. Downwind personnel must be evacuated.

SPECIAL FIRE HAZARDS: Avoid exposure through use of a self-contained, positive-pressure breathing apparatus. May generate nitrogen oxide, ammonia and other unidentified gases and vapors which may be toxic. Avoid inhalation.

SECTION VI: ACCIDENTAL RELEASE MEASURES

PROCEDURES IN CASE OF ACCIDENTAL RELEASE OF LEAKAGE: Remove all ignition sources. Evacuate personnel to safe areas. Ventilate area. Avoid breathing vapor. Wear suitable protective clothing, gloves and eye/face protection. Use self-contained breathing apparatus or supplied air for large spills or confined areas. Avoid contact with skin, eyes or clothing (See Section VIII). Contain spill if possible. Absorb or wipe up with a suitable non-reactive material, put into a container and dispose of properly (See Section XIII). Prevent entry into sewers and waterways.

SECTION VII: HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Do not store in iron or other reactive metal containers. Do not use sodium nitrate or other nitrosating agents with this product. Cancer causing nitrosamines could be formed. Have and eye wash and shower available for emergencies. Avoid contact with eyes. Adhere to work proactive rules established by government regulations. Do not store near acids. Keep containers tightly closed in dry, cool and well-ventilated place. Product may partially freeze with extended exposure to cold temperatures, resulting in crystallization, haziness or separation. If this occurs, product should be warmed to 100°-140°F (38-60C) for one hour and stirred until clear. Do not store in reactive metal

SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE/FACE PROTECTION: Avoid eye and skin contact. Wear chemical type goggles and a face shield. Readily accessible eye wash station. Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

SKIN PROTECTION: Protective clothing such as long sleeved uniforms, coveralls or lab coats must be worn. Impermeable gloves resistant to chemicals are required.

RESPIRATORY PROTECTION: Not ordinarily required. If vapor or mist is generated use a NIOSH approved organic vapor respirator. Supplied air respiratory protection should be used for cleaning large spills or upon entry into tanks, vessels or other confined spaces. If sufficient dust is generated during machining of the cured product, use a NIOSH approved dust respirator.

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 hand thoroughly with soap and water. Remove any contaminated clothing and launder before reuse. Properly dispose of shoes and clothing that are extremely contaminated. Use vacuum equipment to remove cured product dust from clothing and work areas. Compressed air is not recommended.

SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR	Amber (orange) liquid with an ammonia-like odor
BOILING POINT (°F/°C)	>392°F/>200°C
MELTING POINT (°F/°C)	Not determined
SPECIFIC GRAVITY (WATER = 1)	1
pH OF UNDILUTED PRODUCT	Alkaline
VAPOR PRESSURE (MM Hg.)	2.20 mmHg@70°F/21°C
DENSITY	62.428 lb/ft ³ (1g/cm ³) @ 70°F/21°C
VISCOSITY	Not determined
PERCENT (%) VOC	Not determined
SOLUBILITY IN WATER	Slightly Soluble

SECTION X: STABILITY AND REACTIVITY

STABILITY: Stable under normal handling and storage conditions.

INCOMPATIBLE MATERIALS: CAUTION! N-Nitrosamines, many of which are known to be potent carcinogens, may be formed when product comes in contact with nitric acid, nitrites or atmospheres with high nitrous oxide concentrations. Nitrous acid and other nitrosating agents. Organic acids (i.e. acetic acid, citric acid etc.) Mineral acids. Sodium hypochlorite. Product slowly corrodes copper, aluminum zinc and galvanized surfaces. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. Oxidizing agents.

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 ammonia, nitrogen oxides, nitrogen oxide can react with water vapors to form corrosive nitric acid, carbon monoxide, carbon dioxide, nitric acid, nitrosamines, aldehydes, organic acid vapors and other unidentified gases and vapors which may be toxic. Avoid inhalation.

HAZARDOUS POLYMERIZATIONS: Will not occur under normal conditions of use. When mixed with the resin, Part A of a resin system and/or rapid heating of the product in bulk may produce an uncontrolled exothermic reaction which may char and decompose the resin system, generating unidentified gases and vapors which may be toxic. Avoid inhalation.

SECTION XI: TOXICOLOGICAL INFORMATION

MATERIAL OR COMPONENT TOXICITY DATA: No data is available on the product itself.

MEDIAN LETHAL DOSE (SPECIES):

ORAL (LD ₅₀)	Triethylenetetramine	2,780 mg/kg (Rat)
	1-(2-Aminoethyl) piperazine, (AEP)	2,108 mg/kg (Rat)
DERMAL (LD ₅₀)		>2,000 mg/kg, estimate (Rabbit)

SECTION XI: TOXICOLOGICAL INFORMATION (CONTINUED)**IRRITATION INDEX, ESTIMATION OF IRRITATION (SPECIES):**

SKIN		Severe irritation
EYES		Severe irritation
SENSITIZATION	After repeated exposures	Caused sensitization

OTHER: results from a battery of short term genotoxicity test on this material or its components indicate mutagenic activity. The product or a component may be mutagenic, the data is inconclusive.

SECTION XII: ECOLOGICAL INFORMATION

No ecological data has been determined.

SECTION XIII: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS: Material for disposal should be placed in appropriately 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 be determined at the time of disposal, whether the product meets relevant waste classification and to assure proper disposal.

SECTION XIV: TRANSPORTATION INFORMATION**DOT AND IATA:**

PROPER SHIPPING NAME	Not regulated
HAZARD CLASS	Not regulated
IDENTIFICATION NUMBER	Not regulated
PACKING GROUP	Not regulated
LABEL REQUIRED	None

SECTION XV: REGULATORY INFORMATION**OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class(es)**

Irritant. Sensitizer.

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory
EU	EINECS	Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
Australia	AICS	Not on Inventory
Japan	ENCS	Included on Inventory
South Korea	ECL	Not on Inventory
China	SEPA	Included on Inventory
Philippines	PICCS	Not on Inventory
Canada	DSL	Not on Inventory. Notifications have been submitted to Environment Canada...

SECTION XV: REGULATORY INFORMATION (CONTINUED)**SARA TITLE III:**

SECTION 312 (40 CFR 370) HAZARD CLASSIFICATION: Acute Health Hazard Chronic Health Hazard

SECTION 313 TOXIC CHEMICALS: None

WHMIS (CANADA):

CLASSIFICATION:

Toxic Material Causing Other Toxic Effects

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65):

WARNING ! THE STATE OF CALIFORNIA HAS DETERMINED THAT THE FOLLOWING LISTED MATERIAL OR COMPONENT CHEMICALS IN THIS PRODUCT MAY CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None

RCRA INFORMATION:

Currently, this product is not listed in federal hazardous waste regulations 40 CFR, Part 261.33, paragraphs (e) or (f), i.e. chemical products that are considered hazardous if they become wastes, It does not exhibit any of the hazardous characteristics listed in 40 CFR, Part 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation. 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.

THIS PRODUCT CONTAINS A CHEMICAL THAT IS NOT ON THE INVENTORY OF CHEMICAL SUBSTANCES AS PROVIDED IN THE TSCA 94-469 et.al. IT IS BEING PROVIDED TO YOU UNDER THE RESEARCH AND DEVELOPMENT EXCEPTION AS SET FORTH IN 40 CFR 720.36. RECEIPT OF THIS PRODUCT IS AN ACKNOWLEDGMENT OF THIS FACT AND THE ATTENDING REGULATORY LIMITATIONS.

THIS PRODUCT DOES NOT CONTAIN OR IS NOT MANUFACTURED WITH OZONE DEPLETING SUBSTANCES AS IDENTIFIED IN THE TITLE VI, CLEAN AIR ACT "STRATOSPHERIC OZONE PROTECTION" AND THE REGULATIONS SET FORTH IN 40 CFR, PART 82.

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 direct sources for these laws such as the International Agency for Research on Cancer (IARC), 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 CHEMICAL PRESENT AND PREEXISTING INDIVIDUAL DIFFERENCES IN RESPONSE TO THE EXPOSURE.**

The data provided is based on the information received from our raw material suppliers and other sources believed to be reliable. **THIS DATA DOES NOT CONSTITUTE A GUARANTEE (EXPRESSED OR IMPLIED), WARRANTY (INCLUDING A PARTICULAR PURPOSE) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY US WITH RESPECT TO THE DATA, THE PRODUCT DESCRIBED OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO US. WE DISCLAIM LIABILITY FOR DAMAGE OR INJURY INCURRING DIRECTLY OR INDIRECTLY FROM THE USE OF THIS PRODUCT.**

APPROVED AND AUTHORIZED BY: *Edward R. Fyfe*