TUFFLEX POLYMERS

1. PRODUCTS AND COMPANY IDENTIFICATION

Product Name: TUFFLEX SOLVENT FREE "TUFF"
Product Use: Polyurethane Membrane

Manufacturer/Supplier
TUFFLEX POLYMERS
10880 Poplar Avenue
Fontana, CA 92337
Web Address: www.tufflexpolymers.com
Fax Number: (909) 823-6309

Medical Emergency:
CHEMTREC (USA): (800) 424-9300
CHEMTREC (International): (703) 527-3887
MSDS Assistance: (909) 349-2016
Technical Assistance: (909) 349-2016
Customer Service: (909) 349-2016

2. COMPONENT INFORMATION

OCCUPATIONAL EXPOSURE LIMITS

Hazardous Components	CAS No.	OSHA PEL	ACGIH TLV	MFG TLV	Vapor Pressure mm Hg @ Temp
Toluene Diisocynate (TDI)*	26471-62-5	.02 ppm (STEL-.02 ppm)	.005 ppm		0.025 @ 25 °C (77 °F)
Urethane Prepolymer	N/E	N/E	N/E		
Crystalline Silica (Quartz)*	14808-60-7	0.05 mg/m3	0.05 mg/m3		

*Indicates toxic chemicals subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.
Information concerning non-hazardous ingredients is considered a trade secret.

3. HAZARDS IDENTIFICATION

Emergency and Hazards Overview:
Viscous colored liquid with slight odor. Vapors are heavier than air and may travel to distant sources. Evaporation rate is slower than ether.

Ratings
Health 2 Flammability 1 Reactivity 1
Primary Route of Exposure: Skin x Inhalation x Eye x Ingestion x

Health Effect Information

Eye Contact: May cause eye irritation with symptoms of reddening and stinging if wiped or rubbed into eyes.

Skin Contact: May cause skin irritation if wiped or left on the skin

Ingestion: May cause severe irritation. Symptoms may include gastrointestinal irritation, nausea, vomiting and diarrhea.

Inhalation: Isocyanate vapors or mist at concentrations above the TLV can irritate the mucous membranes in the respiratory tract causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and breathing obstruction. Individuals with a pre-existing, non-specific bronchial hyper reactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and fluid in the lungs. These effects are usually reversible. These symptoms can be delayed up to several hours after exposure. As a result of previous repeated overexposures certain individuals develop isocyanate sensitization which will cause them to react to a later exposure to isocyanate at levels well below the TLV.

4. FIRST AID INFORMATION

Eye Contact: Immediately flush with copious amounts of lukewarm water for at least 15 minutes. Have eyes examined and treated by medical personnel.

Skin Contact: Dry skin with paper towel or similar. Wash affected skin thoroughly with soap and water. Immediately remove contaminated clothing. Wash contaminated clothing before reuse. Get medical attention if any discomfort continues.

Inhalation: Move the exposed person to fresh air at once. When breathing is difficult, properly trained personnel may assist affected person by administering 100% oxygen. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

Ingestion: If swallowed, give 1 to 2 glasses of water to drink and contact a physician immediately. Do not induce vomiting. Decision to induce vomiting should only be made by a physician. Never give anything by mouth to an unconscious person.

Notes to Physician: This product contains toluene diisocyanate. This raw material is a known pulmonary sensitizer and known skin sensitizer.

5. FIRE AND EXPLOSION INFORMATION

Flammable Properties
Flash Point: >200°F Test Method: TCC
Flame extension: NA Test Method: NA
Flammable Limits in Air by Volume
Upper Percent: 8
Lower Percent: 2
Autoignition Temperature: NA Test Method: NA
NEPA Classification: H 2 F 1 R 1
Extinguishing Media: CO_2, foam or dry chemicals.
Fire Fighting Measures
Special Fire Fighting Procedures and Equipment: Use water spray to cool containers. If water is used to fight fire, use very large quantities of cold water. Wear NIOSH/OSHA approved, self-contained breathing apparatus and full protective gear.
Unusual Fire and Explosion Conditions: Vapors may be ignited by heat or sparks. Heat-exposed containers may burst. Empty container contains product residues. Do not pressurize, cut, weld, drill, grind or expose containers to heat flame, sparks, static electricity or other sources of ignition. They may explode and cause injury or death.
Hazardous Combustion By-Products: CO, CO_2, Nox, HCN, unburned hydrocarbons.

6. ACCIDENTAL RELEASE MEASURES

Personnel Safeguards: Immediately evacuate all non-essential personnel to safe places. Emergency responders should wear positive pressure supplied air respirator with full face piece and proper protective gear before entering the affected area.

Regulatory Notifications: Waste of this product is defined as hazardous according to U.S. EPA. Spill reporting requirements and reportable quantities vary by region. Consult all applicable state and local regulations. For Canada, observe all precautions noted above.

Containment and Clean-up: Remove all sources of ignition. Provide ventilation. Respiratory protection is recommended during spill clean-up. Stop leak if possible without risk. Prevent liquids from entering sewers, drains or waterways by diking with sand or earth. Absorb with vermiculite or other absorbent material, then flush area with decontamination solution. Put in open drums. Treat and clean with decontamination solution consisting of water containing 4-8% ammonia and 2% detergent.

7. HANDLING AND STORAGE INFORMATION

Handling: Provide good ventilation. Avoid prolonged contact with the skin. Air circulations are exhaustion of isocyanate vapors must be maintained until the coatings have fully cured to insure that no potential fire, explosion or health hazard remains. Use solvent resistant gloves. Avoid rubbing eyes while handling. Respiratory caution to be taken if the cured product is ground or sanded as this may generate hazardous dusts.

Storage: Store in cool, dry, ventilated space away from direct sunlight. Keep away from heat, sparks, open flames, electrical equipment, welding torches, pilot lights, etc. Store at 10-30° C

Empty Container Warnings

Drums: Do not reuse empty drums or containers. Do not cut, drill, grind or weld on or near the empty drum.

Plastic: Do not reuse empty containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION INFORMATION

Exposure Limits and Guidelines

Component	CAS No.	Exposure Limit
Toluene diisocyanate	26471-62-5	0.005ppm OSHA PEL
Quartz	14808-60-7	0.1 mg/m^3 OSHA TWA, 0.1 mg/m^3 ACGIH TWA
Titanium dioxide	13463-67-7	10 mg/m^3 OSHA TWA, 10 mg/m^3 ACGIH TWA

Personal Protective Equipment

Eye/Face Protection: Wear safety goggles
Skin Protection: Use solvent resistant gloves and long sleeved clothing.

Respiratory Protection: If airborne concentrations exceed or are expected to exceed the TLV, use MSHA/NIOSH approved positive pressure supplied air respirator with a full-face piece during application. After application use CCR (Chemical Cartridge Respirator).

Personal Hygiene: Avoid rubbing eyes during handling. Wear chemical tight goggles or full face shield. Use good personal hygiene practices to avoid incidental ingestion.

Engineering Controls/Work Practices

Ventilation: Provide local exhaust or area ventilation to maintain concentration of vapors below TLV
Use explosion proof ventilation equipment. Take care not to draw vapors into occupied office areas or enclosed areas with inhabitants.

Other: Source of clean water should be available in the work area for flushing eyes and skin. Wash thoroughly with soap and water after use and before eating, smoking and using toilet.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colored viscous liquid	**Vapor Pressure: <10** mm Hg@ 20ºC
Odor: Typical paint odor	
Physical state: Viscous liquid	**Vapor Density (air=1):** > air
PH: Not applicable	**Percent Volatile by Volume:** 1-4
DOT Corrosivity: Not applicable	**Volatile Organic Content:** 71 g/liter
Boiling Point: 320 to 486 F	**Molecular Weight:** NA
Melting Point: NA	**Average Carbon Number:** NA
Specific Gravity: 1.1	**Viscosity @ 100F:** NA
Pour Point: NA	**Viscosity@ 40C:** NA
Solubility in Water: Negligible	
Octanol/Water Coefficient: Log K = NA	

10. STABILITY AND REACTIVITY INFORMATION

Chemical Stability: Stable under normal conditions. Avoid heat, sparks, flames
Conditions to Avoid: Avoid contact with strong oxidizing materials and bases. Avoid contact with water.
Incompatible Materials to Avoid: Strong oxidizers. Alkali metals.

11. TOXICOLOGICAL INFORMATION (will only print available data)

Primary Eye Irritation: Irritating
Primary Skin Irritation: Irritating
Acute Dermal Toxicity: NA
Subacute Dermal Toxicity:NA
Dermal Sensitization: NA
Inhalation Toxicity: NA
Inhalation Sensitization: NA
Oral Toxicity: Mutagenicity: NA
Carcinogenicity: Diisocyanates are suspect carcinogens. When ingested, TDI has caused cancer in certain animals.
Reproductive Toxicity: NA
Teratogenicity: NA
Immunotoxicity: NA
Neurotoxicity: NA
Other: NA
No other toxicological information available

12. ECOLOGICAL INFORMATION

Aquatic Toxicity: Not known.
Terrestrial Toxicity: Not known
Chemical Fate and Transport: Not known.
No other ecological information available

13. DISPOSAL INFORMATION

Regulatory Information: Consult all regulations (federal, state, provincial, local etc.) or a qualified waste disposal firm when characterizing waste for disposal.
Waste Disposal Methods: Mix the chemical with an inert material such as sand, vermiculite, etc. and place in a suitable container. Dispose of in accordance with Local Authority requirements.

14. TRANSPORTATION INFORMATION

U.S. Department of Transportation (DOT)
Highway/Rail (Bulk): Non-Regulated

Highway/Rail (Non-Bulk): Non-Regulated

The DOT description is provided to assist in the proper shipping classification of this product and may not be suitable for all shipping descriptions.
International Information
Vessel: IMDG Not Regulated
Air: ICAO Not Regulated
Other: No other information available

15. REGULATORY INFORMATION

Regulatory Lists
U.S. TSCA Inventory: All components of this material are on the US TSCA Inventory or exempt from listing on the TSCA Inventory.
SARA 311/312 Categories

Acute: Yes **Chronic:** Yes **Fire:** No **Pressure:** Yes **Reactive:** Yes

Sara Section 313: This product contains the following Sara, Title III, Section 313 Chemicals:

Chemical	CAS Number
Toluene diisocyanate	26471-62-5
Quartz	14808-60-7

Regulatory Lists Searched

Health & Safety:
Environmental: NA
International: NA
State: Fl, MA, MN, PA, RI
National Inventories: NA

California Proposition 65 Information: Warning! This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

Chemical	CAS Number
Toluene diisocyanate	26471-62-5
Quartz	14808-60-7

Canadian WHMIS Classification
Class: B
Division: 3
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations (CPR). This MSDS contains all the information required by the CPR.
Other Regulations: No other information available

16. OTHER INFORMATION

Health and Environmental Label Language
All ingredients contained in this product are included on the US EPA Toxic Substances Control Act (TSCA) inventory or exempt from listing on the TSCA inventory. All ingredients contained in this product comply with the requirements of the Canadian Environmental Protection Act (CEPA) and are listed on the Domestic Substance List (DSL) or Non-Domestic Substance List (NDSL)

DISCLAIMER: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations. This data and information is furnished upon the condition that the person receiving it shall make his own determination of the conditions for safe use of this product.

Legend: N.A. – Not Applicable, N.E. – Not Established, N.D. – Not Determined

MSDS Revisions
Previous Version Date: 06/30/06
Revision Date: 01/03/11