



MSDS *Material Safety Data Sheet*

4.8.11

8 Pages

MSDS Number FP-478-TB

1.0 Product and Company Identification

Manufacturer:

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Product Name:	FP-478-TB
Revision Date:	4.8.11
MSDS Number:	FP-478-TB
Chemical Family:	Aromatic Isocyanate prepolymer

2.0 Hazards Identification

Route of Entry: Inhalation, eye and skin contact.
Target of Organs: Eyes; Respiratory System; Skin:
Inhalation: ACUTE EXPOSURE: MDI vapor or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Individuals with a pre-existing, non-specific bronchial hyper-reactivity can respond to the concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever, chills) has also been reported. These symptoms can be delayed up to several hours after exposure.
CHRONIC EXPOSURE: As a result of previous repeated overexposures or a single large dose, certain individuals develop isocyanate sensitization (chemical asthma) which will cause them to react to a later isocyanate exposure at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthma attack, could be immediate or delayed (up to several hours after exposure). Similar to many non-specific asthmatic responses, there are reports that once sensitized, an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Overexposure to isocyanates has also been reported to cause lung

MSDS Number FP-478-TB

damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

Skin Contact: Acute Exposure: Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove.
Chronic Exposure: Prolonged contact can cause reddening, swelling, rash, scaling blistering, and in some cases, skin sensitization. Individuals who have developed a skin sensitization can develop these symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor.

Eye Contact: ACUTE EXPOSURE: Liquids, aerosols or vapors are irritating and can cause tearing, reddening, and swelling. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible.
CHRONIC EXPOSURE: None Found

Ingestion: ACUTE EXPOSURE: Can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.
CHRONIC EXPOSURE: None found

3.0 Composition/Information on Ingredients

Ingredients:

CAS #	Chemical Name	Percent
25322694	Poly (oxy(methyl-1, 2-ethanediyl), .alpha	40 - 60%
101688	4,4 -Methylenediphenyl diisocyanate	2 - 5%
64742467	Distillates, petroleum, hydrotreated midd	3 -10%
26447405	Benzene, 1, 1' - methylenebis(isocyanato)	5 - 10%
584849	Toluene diisocyanates	>1%

OSHA Regulatory Status: Xn Harmful

This MSDS Contains valuable information critical to the safe handling and proper use of this product. This MSDS should be retained and available for employees and other users of this product.

4.0 First Aid Measures

Inhalation: Move to an area free from risk of further exposure. Administer oxygen or artificial respiration as needed. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Consult your physician should this occur.

Skin Contact: Remove contaminated clothing. Wash affected skin thoroughly with soap and water. Wash contaminated clothing thoroughly before reuse. For severe exposures get under safety shower after removing clothing, then get medical attention. For lesser exposure, seek medical attention if irritation develops or persists after the area is washed.

Eye Contact: Flush with copious amounts of lukewarm water for at least 15 minutes, holding eyelids open at all times. Refer individual to physician or ophthalmologist for immediate follow-up.

MSDS Number FP-478-TB

Ingestion: DO NOT INDUCE VOMITING. Give 1 to 2 cups of milk or water to drink. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Get prompt, qualified medical attention.

5.0 Fire Fighting Measures

Flash Point: 200 DEG C (392 DEG F)
Flash Point Method: Pensky-Martens Closed Cup (ASTM D-93)

Dry chemical (e.g. monoammonium phosphate, potassium sulfate, and potassium chloride), carbon dioxide, high expansion (proteinic) chemical foam, water spray for large fires. Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by fire fighters. During a fire, vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. At temperatures greater than 400 DEG F (204 DEG C), this product can be polymerized and decompose which can cause pressure build-up in closed containers. Explosive rupture is possible. Therefore, use cold water to cool fire-exposed containers.

6.0 Accidental Release Measures

Cover the spill with sawdust, vermiculite, Fuller's earth or other absorbent material. Pour decontamination solution over spill area and allow to react for at least 10 minutes. Collect material in open containers and add further amounts of decontamination solution. Remove containers to safe place, cover loosely and allow to stand for 24 to 48 hours. Wash down area with decontamination solutions. Decontamination solutions: non-ionic surfactant Union Carbide's Tergitol TMN-10 (20%) and water (80%); concentrated ammonia (3-8%), detergent (2%) and water (90-95%). Respiratory protection is recommended during spill clean-up.

7.0 Handling and Storage

Handling Precautions: Avoid breathing vapors or mist; Avoid contact with eyes, skin or clothing; Do not expose containers to open flame, excessive heat, or direct sunlight.

Storage Requirements: Storage temperature: Minimum 40 DEG F (5 DEG C) / Maximum 150 DEG (66 DEG C). Store in tightly closed containers to prevent moisture contamination. This product reacts slowly with water to form CO₂ gas. This gas can cause sealed containers to expand and possibly rupture. Do not reseal if contamination is suspected.
Store in cool/dry area.

8.0 Exposure Controls/Personal Protection

Engineering Controls: Educate and train employees in safe use of this product. Follow all label instructions. Local exhaust should be used to maintain levels below the TLV whenever this product is processed, heated or spray applied. For spray applications, an air-supplied respirator must be worn. All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94).

MSDS Number FP-478-TB

Protective Equipment: An air-supplied respirator must be worn during spray applications, during long-term (over 1 hour) exposures when the product is heated or in environments of high concentrations near the TLV, an air-purifying respirator equipped with organic cartridges or canisters and dust filters can be used. However, due to the poor warning properties of this product, proper fit and timely replacement of filter elements must be ensured. Observe OSHA regulations for respirator use (29CFR 1910.134).
Chemical resistant gloves (butyl rubber, nitrile rubber). Cover as much of the exposed area as possible with appropriate clothing. If skin creams are used, keep the area covered only by the cream to a minimum.
Liquid chemical goggles or full-face shield. Contact lenses should not be worn.
ADDITIONAL PROTECTIVE MEASURES: Clean, fresh running water should be available.

Exposure Guidelines: The sum of the 2,4 and 2,6 isomer concentration should not exceed the guideline Limits.

2,4-Toluene Diisocyanate (584-84-9)
US. OSHA Table Z-1 Limits for Air Contaminates (29 CFR 1910.1000)
Ceiling Limit Value: 0.02 ppm, 0.14 mg/m³
US. ACGIH Threshold Limit Values
Time weighted Average(TWA): 0.005 ppm
US. ACGIH Threshold Limit Values
Short Term Exposure Limit (STEL): 0.02 ppm
US. ACGIH Threshold Limit Values
Hazard Designation: Sensitiser.
US. ACGIH Threshold Limit Values
Hazard Designation: Group A4 Not classifiable as a human carcinogen.

2,6-Toluene Diisocyanate (91-08-7)
US. ACGIH Threshold Limit Values
Time weighted Average(TWA): 0.005 ppm
US. ACGIH Threshold Limit Values
Short Term Exposure Limit (STEL): 0.02 ppm
US. ACGIH Threshold Limit Values
Time weighted Average(TWA): 0.005 ppm
US. ACGIH Threshold Limit Values
Short Term Exposure Limit (STEL): 0.02 ppm
US. ACGIH Threshold Limit Values
Hazard Designation: Group A4 Not classifiable as a human carcinogen.
US. ACGIH Threshold Limit Values
Hazard Designation: Sensitiser.
US. ACGIH Threshold Limit Values
Hazard Designation: Group A4 Not classifiable as a human carcinogen.

9.0 Physical and Chemical Properties

Appearance: Clear Yellow Liquid
Physical State: Liquid
Odor: Slightly musty
pH: N.A.

Boiling Point: 208 DEG C (406 DEG F)
Freezing/Melting Pt: Not established
Solubility: Reacts slowly with water to liberate CO₂ gas.

MSDS Number FP-478-TB

Vapor Pressure: Less than 10-5 mmHg @ 68 DEGF (20 DEG C) for MDI **Spec Grav./Density:** 1.08 @ 68 DEG F (20 DEG C)

Vapor Density: 8.5 (MDI)

VOC: 0 g/L

10.0 Stability and Reactivity

Stability:	Product is stable under normal conditions.
Conditions to avoid:	Temperatures over 400 DEG F (204 DEG C).
Materials to avoid (incompatibility):	Water, amines, strong bases, alcohols.
Hazardous Decomposition products:	By Fire and High heat; Carbon monoxide (CO), oxides of nitrogen, traces of HCN, MDI and TDI vapors and aerosol
Hazardous Polymerization:	May occur if in contact with moisture or other materials which react with isocyanates. May occur at temperatures over 400 DEG F (204 DEG C)

11.0 Toxicological Information

Acute Eye Effects: Liquid, aerosols or vapors are irritating and can cause tearing, reddening and swelling. If left untreated, cornea damage can occur and injury is slow to heal. However, damage is usually reversible. (See Section VI for treatment).

Acute Skin Effects: Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove.

Acute Inhalation Effects: Vapors or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat and lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (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 pulmonary edema (fluid in the lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu like symptoms (e.g. fever, chills) have also been reported. These symptoms can be delayed up to several hours after exposure.

Acute Ingestion Effects: Can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

Chronic Eye Effects: None found

Chronic Skin Effects: Prolonged contact can cause reddening, swelling, rash, scaling, blistering, and in some cases, skin sensitization. Individuals who have developed a skin sensitization can develop these symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor.

MSDS Number FP-478-TB

Chronic Inhalation Effects: As a result of previous repeated overexposures or a single large dose, certain individuals develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. These symptoms which can include chest tightness, wheezing, coughing, shortness of breath or asthma attack, could be immediate or delayed (up to several hours after exposure). Similar to many non-specific asthmatic responses, there are reports that once sensitized, an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Overexposure to isocyanates has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

Toxicity Data for TDI

Toxicity Note

Toxicity data is for TDI mixed isomers

Acute Oral Toxicity

LD50: 4, 130-5, 110 mg/kg (rat, Male/Female)

Acute Inhalation Toxicity

LC50: 480 mg/m³, vapor, 4 h (rat)

LC50: 49-50.4 ppm (350-360 mg/m³), aerosol, 4h (rat, Male/Female)

RD50: 2.12 ppm, vapor, 3h (Rat,male)

Acute dermal toxicity

LD50: > 9,400 mg/kg (rabbit, Male/Female)

Skin irritation

Rabbit, Draize, Exposure Time: 24 hrs, Moderately irritating

Eye Irritation

Rabbit, Draize, Severely irritating

Sensitization

Dermal: sensitizer (guinea pig, Maximization Test (GPMT))

Inhalation: sensitizer (Guinea pig)

Repeated Dose Toxicity

113 Days, inhalation: NOAEL: 0.5 ppm, (rat, Male/Female, 18 hrs/day, 5 days/week)

Irritation to lungs and nasal cavity.

Mutagenicity

Genetic Toxicity in Vitro:

Ames: (Salmonella typhimurium, Metabolic Activation: with/without)

Positive and negative results were reported. The use of certain solvents which rapidly hydrolyze diisocyanates is suspected of producing the positive mutagenicity results.

Genetic Toxicity in Vitro;

Micronucleus Assay: negative (mouse)

Carcinogenicity

Rat, Female, inhalation, 113 weeks, 6 hrs/day, 5 days/week

Negative.

Toxicity to Reproduction/Fertility

Two generation study, inhalation, 6 hrs/day 7 days/week, (rat, Male/Female) NOAEL (parental): 0.08 ppm,

MSDS Number FP-478-TB

NOAEL (maternal): 0.1 ppm
No effects on Reproductive parameters observed at doses tested.

Developmental Toxicity/Teratogenicity

Rat, Female, inhalation, gestation days 6-15, 6 hrs/day, NOAEL (teratogenicity): 12 mg/m³, NOAEL (maternal): 4 mg/m³
No Teratogenic effects observed at doses tested. Fetotoxicity seen only with maternal toxicity.

12.0 Ecological Information

Ecological Data for TDI

Biodegradation: 0%, exposure time 28 days

Bioaccumulation: Carp, Exposure time: 56 days, , 1BCF.
Not expected to bio-accumulate.

Acute and Prolonged Toxicity to fish: LC50: > 100mg/l (zebra fish (Brachydanio rerio), 96 hours)
LC50: 133 mg/l (Rainbow (Donaldson) Trout (Oncorhynchus mykiss), 96 h)

Acute Toxicity to Aquatic Invertebrates: EC50> 12.5 mg/l (Water flea (Daphnia magna), 48 hrs)
EC50: >500 mg/l (Grass shrimp, 24 hrs)

Toxicity to Aquatic Plants: EC50: 3,230-4,300 mg/l, End Point: growth (Green algae (other:algae, 96 h)

Toxicity to Microorganisms: EC50: > 100 mg/l, (activated sludge microorganisms, 3 hr)

Additional Ecotoxicological Remarks:

Ecotoxicity data is for TDI mixed isomers

13.0 Disposal Considerations

Waste and container disposal must be in accordance with federal, state, and local environmental control regulations. Incineration is the preferred method. Empty containers must be handled with care due to product residue. Decontaminate prior to disposal. **DO NOT HEAT OR CUT EMPTY CONTAINERS WITH ELECTRIC OR GAS TORCH.**

14.0 Transport Information

DOT (HM-181; DOMESTIC SURFACE)

UN/NA NUMBER:	none
D.O.T. SHIPPING NAME:	Aromatic Isocyanate Prepolymer
D.O.T. HAZARD CLASS:	NON REGULATED
PACKAGING GROUP:	none
D.O.T. LABEL	none
D.O.T. PLACARD	none

ICAO/IATA (AIR)

UN NUMBER:	none
PROPER SHIPPING NAME:	Aromatic Isocyanate Prepolymer
HAZARD CLASS DIVISION NUMBER:	NON REGULATED
SUBSIDIARY RISK:	none

MSDS Number FP-478-TB

PACKING GROUP: none
HAZARD LABEL(S): none
RADIOACTIVE?: Non-radioactive
PASSENGER AIR-MAXIMUM QUANTITY: none
PACKING INSTRUCTION NUMBER: none
CARGO AIR - MAXIMUM QUANTITY: none
PACKING INSTRUCTION NUMBER: none

IMO/IMDG CODE (OCEAN)

UN NUMBER: none
PROPER SHIPPING NAME: Aromatic Isocyanate Prepolymer
HAZARD CLASS DIVISION NUMBER: NON REGULATED
PACKING GROUP: none
HAZARD LABEL(S): none
HAZARD PLACARD (S): none

MSDS Number BTR-1119

15.0 Regulatory Information

COMPONENT / (CAS/PERC) / CODES

The principle components and additives of this product are included in the Australian Inventory of Chemical Substances (AICS) or comply with the requirements of the Industrial Chemicals (Notification and Assessment) Act of 1989.

*Distillates, petroleum, hydrotreated middle(64742467 3-10%) TSCA

REGULATORY KEY DESCRIPTIONS

TSCA = Toxic Substances Control Act

16.0 Other Information

OTS Company believes the information herein to be true, accurate and reliable and is given in good faith. The company cannot, however be held responsible for any errors or omissions and will not accept responsibility for any use which may be made of the information. Properties shown are typical and do not imply a specification. This information is based on practical experience and laboratory testing, successful use depends on the conditions applicable at the time and the equipment used. Users must ensure by their own testing that the products perform adequately in each situation. Since conditions and disposal are beyond our control, OTS Company, Inc. disclaims any liability incurred in connection with the use of our products; no warranty, express or implied, is given nor is any freedom from any patent or use of trademark owned by OTS or others implied.

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