Manufacturing & Supply, Inc.

MSDS *Material Safety Data Sheet*

2.25.11
8 Pages

MSDS Number FP 510 B

1.0 Product and Company Identification

Manufacturer:
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Product Name: FP 510 Part B
Revision Date: 2/25/11
MSDS Number: FP 510 B
Chemical Family: Aromatic Isocyanate Prepolymer

This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.
Transportation emergency phone number: Infotrac 800.535.5053

2.0 Composition/Information on Ingredients

Ingredients:

Cas#	Chemical Name	Perc.
25322694	Poly (oxy methyl-1, 2-ethanediyl), .alpha	40-50%
26447405	Benzene, 1-1' –methylenebis 4-isocyanato-	36-46%
101688	4, 4' –Methylenediphenyl diisocyanate	10-20%

OSHA Regulatory Status:
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.

3.0 Hazards Identification

Route of Entry: Skin and eye contact from liquid and aerosols. Inhalation-although this product is low in volatility, an inhaling hazard can exist from the aerosols or vapors formed during application.

Target of Organs: Skin; Eyes

Inhalation: ACUTE EXPOSURE: Vapors or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the reparatory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Individual

With a pre-existing, non-specific bronchial hyperactivity can respond to the concentrations below the TLV with similar symptoms as well as the asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). The 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 of 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.

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 is come 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 EPXOSURE: None found

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 sever exposures get under safety shower after removing clothing, then get medical attention. For lesser exposure, seek medical attention if irritations develop or persist 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.

Ingestion:

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

NOTE TO PHYSICIAN

SKIN:	This compound is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burns. If burned, treat as thermal burn.
EYES:	Stain for evidence or corneal injury. IF cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors may produce reversible corneal epithelial edema impairing vision.
RESPIRATORY:	This compound is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a skin or pulmonary sensitization reaction to this material should be removed from exposure to an isocyanate.
INGESTION:	Treat symptomatically. There is not specific antidote. Inducing vomiting is contraindicated because of the irritating nature of this compound.

5.0 Fire Fighting Measures

Flash Point: 388 DEG F (198 DEG C
Flash Point Method: DIN 51758

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.

Unusual Fire or Explosion Hazards: Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous.

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 last 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 (5DEGC) / Maximum 150 DEG (66DEG C). Store in tightly closed containers to prevent moisture contamination. This product reacts slowly with water to from 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 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 (29CFR 1910.94).

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, nitrate 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.

Exposure Guidelines: **Exposure Limits:**

USA OSHA (TWA)/PEL):	0.02 ppm
NIOSH (TWA):	0.0005 ppm
IDLH:	75 mg/m3
NIOSH (C 10 min):	0.02 ppm

9.0 Physical and Chemical Properties

Appearance: Clear Brown Liquid
Physical State: Liquid
Odor: Slightly Musty
PH: N.A.

Boiling Point: Not established
Freezing/Melting Pt: Not established
Solubility: Reacts slowly with water to liberate CO2 gas.

Vapor Pressure: Less than 10-5 mmHg @ 77 DEG F (25 DEG C) for MDI

Spec Grav./Density: 1.10 @ 68 DEG F (20 DEG C)

Vapor Density: 8.5 (MDI)

VOC: 0 g/L

Bulk Density: 9.2 lbs/gal

10.0 Stability and Reactivity

Stability:	Product is stable under normal conditions.
Conditions to avoid:	Oxidation promoting conditions (Heat, Sunlight and Air)
Materials to avoid (incompatibility):	Water, amines, strong bases, alcohols.
Hazardous Decomposition products:	By fire and High heat; hydrogen cyanide; Carbon dioxide (C02), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke, Isocyanate, Isocyanic Acid, Other undetermined compounds.
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 irruption which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove.

Acute Inhalations Effects: Vapors or mist at concentrations above the TLV can irate(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 preexisting, non-specific bronchial hyperreactivity can respond to concentrations below the TLV may lead to bronchitis, bronchial spasm and 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.

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.

Chronic Ingestion Effects: None found.

Polymeric MDI:

Acute Oral Toxicity
LD50:.2,000 mg/kg (rat, Male/Female)

Acute Inhalation Toxicity
LC50: 490 mg/m3, vapor, 4 h (rat)

Repeated Dose Toxicity
90 days, inhalation: NOAEL: 1 mg/m3, (rat, Male/Female, 6 hrs/day 5 day/week
Irritation to lungs and nasal cavity.
2 years, inhalation: NOAEL: 0.2 mg/m3, (rat, Male/Female, 6 hrs/day 5 days/week
Irritation to lungs and nasal cavity.

Mutagenicity
Genetic Toxicity in Vitro:
Bacterial-gene mutation assay: negative (Salmonella typhimurium, Metabolic Activation: with/without

Carcinogenicity
Rat, Male/Female, inhalation, 2 years, 6 hrs/day 5 days/week
Exposure to a level of 6 mg/m3 polymeric MDI was related to the occurrence of lung tumors. This level is significantly over the TLV for MDI.

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.

4, 4' –MDI:

Acute Inhalation Toxicity
LC50: 369 mg/m3, 4 hrs (rat, Male/Female)
Lc50: > 2240 mg/m3, aerosol, 1 h (rat)

Acute dermal toxicity
LD50: > 10,000 mg/kg (rabbit)

Skin Irritation
Rabbit, Draize Test, Slightly irritating

Eye Irritation
Rabbit, Draize Test, Slightly irritating

Sensilization
Dermal: sensitizer (guinea pig, Maximization Test (GPMT)
Inhalation: sensitizer (Guinea pig)

Repeated Dose Toxicity
90 Days, inhalation: NOAEL: 0.3 mg/m3, (rat, Male/Female, 18 hrs/day, 5 days/week)
Irritation to lungs and nasal cavity.

Mutagenicity
Genetic Toxicity ib 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, 2 Years, 17 hrs/day, 5 days/week
Negative.

12.0 Ecological Information

Biodegradation
0%, Exposure time: 28 Days

Bioaccumulation
Rainbow trout, Exposure time: 112 d, <1 BCF
Does not bioaccumulate.

Acute and Prolonged Toxicity to Fish
LCO: >1,000 mg/l (Zebra fish (Brachydanio rerio), 96 hrs)
LCO: >3,000 mg/; (Killfish (Oryzias latipes), 96 h)

Acute Toxicity to Aquatic Invertebrates
EC50: >1,000mg/l (Water flea (Daphnia magna), 24 hrs)

Toxicity to Aquatic Plants
NOEC: 1,640 mg/l, End Point: growth (Green algae (Scenedesmus subspicatus), 72 hrs)

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

Additional Ecotoxicological Remarks
Ecotoxicity data based on polymeric MDI

Ecological Data for 4, 4'-MDI:

Acute and Prolonged Toxicity to Fish
LC50: >500 mg/l (Zebra fish (Brachydanio rerio), 24 hrs)

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

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 reside. Decontaminate prior to disposal. DO NOT SHEAR OR CUT EMPTY CONTAINDER WITH ELECTRIC OR GAS TORCH.

14.0 Transport Information

D.O.T. SHIPPING NAME:	Aromatic Isocyanate Prepolymer
D.O.T. HAZARD CLASS:	Non-regulated
UN/NA NUMBER:	None
D.O.T. LABEL	None
D.O.T. PLACARD	None

15.0 Regulatory Information

COMPONENT / (CAS/PERC) / CODES

*4,4' –Methylenediphenyl diisocyanate (101688 10-20%) CERCLA, HAP, MASS, NJHS, OSHAWAC, PA, SARA313, TXAIR

TSCA: All components in this mixture are included in the TSCA Inventory.

REGULATORY KEY DESCRIPTIONS

MASS = MA Massachusetts Hazardous Substances List
OSHAWAC = OSHA Workplace Air Contaminates
PA = PA Right-To-Know list of Hazardous Substances
SARA313 = Sara 313 Title III Toxic Chemicals
TXAIR = TX Air Contaminates with Health Effects Screening Level
CERCLA = Superfund clean up service
HAP = Hazardous Air Pollutants
NJHS = NJ Right to know List of Hazardous Substances

16.0 Other Information

Disclaimer: Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposed or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s). End of MSDS

MSDS Number FP 510 B