SDS: 0006945
Date Prepared: 03/08/2016

SAFETY DATA SHEET

1. IDENTIFICATION

Product Name:	**CONATHANE® UF-3 Part A Urethane Prepolymer**
Product Description:	Aromatic prepolymer
Synonyms:	None
Chemical Family:	Aromatic isocyanate
Molecular Formula:	Mixture
Molecular Weight:	Mixture
Intended/Recommended Use:	Polyurethane prepolymer

CYTEC INDUSTRIES INC., FIVE GARRET MOUNTAIN PLAZA, WOODLAND PARK, NEW JERSEY 07424, USA
For Product and all Non-Emergency Information call 1-800/652-6013. Outside the USA and Canada call 1-973/357-3193.

EMERGENCY PHONE (24 hours/day) - For emergency only involving spill, leak, fire, exposure or accident call:
Asia Pacific:
Australia - +61-3-9663-2130 or 1800-033-111 (IXOM)
China (PRC) - +86 0532 83889090 (NRCC)
New Guinea - +61-3-9663-2130 or 1800-033-111
New Zealand - +61-3-9663-2130 or 0800-734-607 (IXOM)
India, Japan, Korea, Malaysia, Thailand - +65 3158 1074 (Carechem24 Singapore)
India (Hindi Speaking Only) - +65 3158 1198 or 000800 100 7479 (Carechem24 Singapore)
Canada: +1-905-356-8310 (Cytec Welland, Canada plant)
Europe/Africa/Middle East (Carechem24 UK):
Europe, Middle East, Africa, Israel - +44 (0) 1235 239 670
(Arabic speaking countries) - +44 (0) 1235 239 671
Latin America:
Brazil - 0800 7077 022 (SUATRANS)
Chile - +56-2-2-247-3600 (CITUC QUIMICO)
All Others - +52-376-73 74122 (Cytec Atequiza, Mexico plant)
USA: +1-703-527-3887 or 1-800-424-9300 (CHEMTREC #CCN6083)

2. HAZARDS IDENTIFICATION

GHS Classification
Carcinogenicity Hazard Category 2
Acute Toxicity (Inhalation) Hazard Category 4
Specific Target Organ Toxicity - Single Exposure Hazard Category 3
Specific Target Organ Toxicity - Repeated Exposure Hazard Category 2
Skin Corrosion / Irritation Hazard Category 2
Serious Eye Damage / Eye Irritation Hazard Category 2A
Respiratory Sensitizer Hazard Category 1
Skin Sensitizer Hazard Category 1B

LABEL ELEMENTS

Signal Word
Danger

Hazard Statements
Suspected of causing cancer
Harmful if inhaled
May cause damage to organs through prolonged or repeated exposure
May cause respiratory irritation
Causes skin irritation
Causes serious eye irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction

Precautionary Statements
Obtain special instructions before use.
Wear protective gloves/protective clothing/eye protection/face protection.
Use only outdoors or in a well-ventilated area.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wash face, hands and any exposed skin thoroughly after handling.
Wear respiratory protection.
Contaminated work clothing should not be allowed out of the workplace.
IF exposed or concerned: Get medical advice/attention.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.
IF ON SKIN: Wash with plenty of soap and water.
Specific treatment (see supplemental first aid instructions on this label).
Take off all contaminated clothing and wash it before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
If skin irritation or rash occurs: Get medical advice/attention.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local and national regulations.

Hazards Not Otherwise Classified (HNOC), Other Hazards
Polymerization may occur from excessive heat, contamination or exposure to direct sunlight.
Contamination or excessive heat may result in dangerous pressure.

---

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance, Mixture or Article? Mixture

HAZARDOUS INGREDIENTS

Component / CAS No.	%	GHS Classification	Carcinogen
Polymeric Diphenylmethane Diisocyanate (pMDI) 9016-87-9	40 - 50	Acute Tox. 4 (H332) STOT RE 2 (H373) STOT SE 3 (H335) Skin Irrit. 2 (H315) Eye Irrit. 2A (H319) Resp. Sens. 1 (H334) Skin Sens. 1B (H317)	-
Methylenediphenyl diisocyanate (MDI) 101-68-8	30 - 40	Carc. 2 (H351) Acute Tox. 4 (H332) STOT RE 2 (H373) STOT SE 3 (H335) Skin Irrit. 2 (H315) Eye Irrit. 2A (H319) Resp. Sens. 1 (H334) Skin Sens. 1B (H317)	-
1,1'- Methylenebis [isocyanatobenzene] 26447-40-5	15 - 25	Carc. 2 (H351) Acute Tox. 4 (H332) STOT RE 2 (H373) STOT SE 3 (H335) Skin Irrit. 2 (H315) Eye Irrit. 2A (H319) Resp. Sens. 1 (H334) Skin Sens. 1B (H317)	-

The specific chemical identity and/or exact percentage of composition for one or more ingredients has been withheld as a trade secret.

Additional GHS classification or other information may be included in this section but has not been adopted by OSHA. See Section 16 for full text of H phrases.

---

4. FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES

Eye Contact:
Rinse immediately with plenty of water for at least 15 minutes. Obtain medical advice if there are persistent symptoms.

Skin Contact:
Wash immediately with plenty of water and soap. Remove contaminated clothing and shoes without delay. Obtain medical attention. Do not reuse contaminated clothing without laundering. Destroy or thoroughly clean shoes before reuse.

Ingestion:
If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Inhalation:
Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

None known

INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDS

Not applicable

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:
Use dry chemical, sand or earth.

Extinguishing Media to Avoid:
full water jet

Protective Equipment:
Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/Personal Protection).

Special Hazards:
Water or alcohol foam may react vigorously with hot isocyanate releasing carbon dioxide. Do not reseal contaminated containers since pressure build-up may cause rupture. Keep containers cool by spraying with water if exposed to fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:
Where exposure level is known, wear approved respirator suitable for level of exposure. Where exposure level is not known, wear approved, positive pressure, self-contained respirator. In addition to the protective clothing/equipment in Section 8 (Exposure Controls/Personal Protection), wear impermeable boots.

Methods For Cleaning Up:
Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush spill area with water.

References to other sections:
See Sections 8 and 13 for additional information.

7. HANDLING AND STORAGE

HANDLING

Precautions: Use only outdoors or in a well-ventilated area. Wash hands thoroughly after handling. In case of inadequate ventilation wear respiratory protection. Contaminated work clothing should not be allowed out of the workplace. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe vapors or spray mist. Wear protective gloves and eye/face protection.

Special Handling Statements: The 4-hour LC50 value of this material is unlikely to be encountered under reasonably forseeable transport conditions. Provide good ventilation of working area (local exhaust ventilation if necessary). Persons with a pre-existing, non-specific bronchial hyper-reactivity can respond to concentrations below the exposure limits with symptoms like irritation of 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), as well as asthma attack or asthma-like symptoms. Individuals previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash.

STORAGE
Store in tightly closed containers in a cool, well-ventilated area away from heat, sparks and flames. Observe the general rules of industrial fire protection.

Storage Temperature: Room temperature
Reason: Quality.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:
Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure when spraying or curing at elevated temperatures.

Respiratory Protection:
Where exposures are below the established exposure limit, no respiratory protection is required. Where exposures exceed the established exposure limit, use respiratory protection recommended for the material and level of exposure. A full facepiece respirator also provides eye and face protection. Cutting, grinding or sanding of parts fabricated after curing may create respirable dust particles. Respiratory protection appropriate for this dust may be required. Refer to components listed above for potential hazardous components in the dust.

Eye Protection:
Wear eye/face protection such as chemical splash proof goggles or face shield. Eyewash equipment and safety shower should be provided in areas of potential exposure.

Skin Protection:
Avoid skin contact. Wear impermeable gloves and suitable protective clothing. Prevent contamination of skin or clothing when removing protective equipment.

Hand Protection:
Nitrile or fluorinated rubber gloves. Consider the porosity and elasticity data of the glove manufacturer and the specific conditons in the work place. Replace gloves immediately when torn or any change in appearance (dimension, colour, flexibility etc) is noticed. Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred.

Additional Advice:
Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water. It is recommended that a shower be taken after completion of workshift especially if significant contact has occurred. Work clothing should then be laundered prior to reuse. Street clothing should be stored separately from work clothing and protective equipment. Work clothing and shoes should not be taken home.

Exposure Limit(s)

The below constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

101-68-8 Methylenediphenyl diisocyanate (MDI)

OSHA (PEL):	0.02 ppm (Ceiling)
	0.2 mg/m^3 (Ceiling)
ACGIH (TLV):	0.005 ppm (TWA)
Other Value:	Not established

26447-40-5 1,1'- Methylenebis [isocyanatobenzene]

OSHA (PEL):	0.02 ppm (Ceiling)
	0.2 mg/m^3 (Ceiling)
ACGIH (TLV):	Not established
Other Value:	Not established

---

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	dark brown
Appearance:	liquid
Odor:	musty
Boiling Point:	208 °C 406.4 °F
Melting Point:	Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure: <0.0001mm Hg @ 25 °C
Specific Gravity/Density: 1.24
Vapor Density: Not available
Percent Volatile (% by wt.): Not available
pH: Not available
Saturation In Air (% By Vol.): Not available
Evaporation Rate: Not available
Solubility In Water: Insoluble, but reacts slowly with water to liberate CO2 gas
Volatile Organic Content: Not available
Flash Point: 199 °C 390.2 °F ASTM D 93
Flammability (solid, gas): Not available
Flammable Limits (% By Vol): Not available
Autoignition (Self) Temperature: Not available
Decomposition Temperature: Not available
Partition coefficient (n-octanol/water): Not available
Odor Threshold: Not available
Viscosity (Kinematic): Not applicable

DUST HAZARD INFORMATION

Particle Size (microns): Not applicable
Kst (bar-m/sec): Not applicable
Maximum Explosion Pressure (Pmax): Not applicable
Dust Class: Not applicable
Minimum Ignition Energy (MIE) (mJ): Not applicable
Minimum Ignition Temperature (MIT) (°C): Not applicable
Minimum Explosive Concentration (MEC) (g/m^3): Not applicable
Limiting Oxygen Concentration (LOC) (%): Not applicable

10. STABILITY AND REACTIVITY

Stability: Stable

Conditions To Avoid: None known

Polymerization: May occur

Conditions To Avoid: Avoid contact with acids, oxidizing agents, bases or amines.

Materials To Avoid: Avoid acids, bases, strong amines, oxidizing agents and water.

Hazardous Decomposition Products: Carbon dioxide
Carbon monoxide (CO)
Oxides of nitrogen
methylene diisocyanate

11. TOXICOLOGICAL INFORMATION

PRODUCT TOXICITY INFORMATION

Likely Routes of Exposure: Oral, Eyes, Skin, Respiratory System.

ACUTE TOXICITY DATA

oral	rat	Acute LD50	>2000 mg/kg
dermal	rabbit	Acute LD50	>2000 mg/kg
inhalation	rat	Acute LC50 4 hr	~1.5 mg/l (Dust/Mist)

LOCAL EFFECTS ON SKIN AND EYE

Acute Irritation	skin	Irritating
Acute Irritation	eye	Irritating

ALLERGIC SENSITIZATION

Sensitization	skin	Sensitizing
Sensitization	respiratory	Sensitizing

GENOTOXICITY

Assays for Gene Mutations

Ames Salmonella Assay No data

OTHER INFORMATION

The product toxicity information above has been estimated.
Prolonged or repeated contact with skin or mucous membrane may result in irritation symptoms such as redness, blistering, dermatitis, etc.
The inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.

HAZARDOUS INGREDIENT TOXICITY DATA

Polymeric Diphenylmethane Diisocyanate (pMDI) has acute oral (rat) LD50 value of >2000 mg/kg. The acute 4 hour inhalation LC50 (rat) value for this material is 490 mg/m³ (aerosol). Direct contact may cause moderate eye, skin and respiratory irritation. Material may cause respiratory sensitization. This substance is not mutagenic in the Ames Salmonella Assay. 90-Day Rat Inhalation Study (6hrs/day; 5 days/week); NOAEL: 1 mg/m³ - Irritation to lungs and nasal cavity. Two-Year Rat Inhalation Study (6 hrs/day; 5 days/week); NOAEL: 0.2 mg/m³ - Irritation to lungs and nasal cavity. Developmental Toxicity/Teratogenicity Rate (Female) Inhalation Study (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. Two-Year Rat Inhalation Carcinogenicity Study (6 hrs/day; 5 days/week) - Exposure to a level of 6 mg/m³ was related to the occurrence of lung tumors. This level is significantly higher than the TLV for MDI.

Acute overexposure to Methylenediphenyl diisocyanate (MDI) vapor may cause severe respiratory irritation. Repeated overexposure to low levels may cause respiratory sensitization and allergic reactions. Respiratory sensitization manifests itself as severe breathing difficulty similar to asthma. This reaction may occur 6-24 hours after exposure and at exposure levels below the established permissible limits. Skin exposure to the liquid may cause moderate irritation and allergic skin reactions. It is also an eye irritant. The oral LD50 in the rats is >15.8 g/kg. The dermal LD50 in rabbits is >7.9 g/kg. The 2-hour inhalation LC50 of a dust of monomeric MDI is >400 mg/m^3 (0.20 mg/L/4hr). This material was mutagenic in the Ames test. However, it was negative in a mouse micronucleus assay.

Acute overexposure to 1,1'-Methylenebis[isocyanatobenzene] vapor may cause severe respiratory irritation. Repeated overexposure to low levels may cause respiratory sensitization and allergic reactions. Respiratory sensitization manifests itself as severe breathing difficulty similar to asthma. This reaction may occur 6-24 hours after exposure and at exposure levels below the established permissible limits. Skin exposure to the liquid may cause moderate irritation and allergic skin reactions. It is also an eye irritant.

---

12. ECOLOGICAL INFORMATION

TOXICITY, PERSISTENCE AND DEGRADABILITY, BIOACCUMULATIVE POTENTIAL, MOBILITY IN SOIL, OTHER ADVERSE EFFECTS

This material is not classified as dangerous for the environment.
The ecological assessment for this material is based on an evaluation of its components.

RESULTS OF PBT AND vPvB ASSESSMENT
Not determined

HAZARDOUS INGREDIENT TOXICITY DATA

Component / CAS No.	Toxicity to Algae	Toxicity to Fish	Toxicity to Water Flea
Polymeric Diphenylmethane Diisocyanate (pMDI) 9016-87-9	Not available	Not available	Not available
Methylenediphenyl diisocyanate (MDI) 101-68-8	Not available	Not available	Not available
1,1'- Methylenebis [isocyanatobenzene] 26447-40-5	Not available	Not available	Not available

---

13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA "listed hazardous waste" or has any of the four RCRA "hazardous waste characteristics." Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA "listed hazardous waste"; information contained in Section 15 of this MSDS is not intended to indicate if the product is a "listed hazardous waste." RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this MSDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 3 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. The Company encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. The Company recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. The Company has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

---

14. TRANSPORT INFORMATION

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

US DOT

Dangerous Goods? X
Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s.
Hazard Class: 9
Packing Group: III
UN/ID Number: UN3082
Transport Label Required: Miscellaneous
Technical Name (N.O.S.): Methylenediphenyl diisocyanate

Component / CAS No.	Hazardous Substances / Reportable Quantity of Product (lbs)
Methylenediphenyl diisocyanate (MDI)	12500

Comments: Hazardous Substances/Reportable Quantities - DOT requirements specific to Hazardous Substances only apply if the quantity in one package equals or exceeds the product reportable quantity.

TRANSPORT CANADA

Dangerous Goods? Not applicable/Not regulated

ICAO / IATA

Dangerous Goods? X
Proper Shipping Name: Aviation regulated liquid, n.o.s.
Hazard Class: 9
Packing Group: III
UN Number: UN3334
Transport Label Required: Miscellaneous
Technical Name (N.O.S.): Methylenediphenyl diisocyanate

IMO

Dangerous Goods? Not applicable/Not regulated

---

15. REGULATORY INFORMATION

Inventory Information

United States (USA): All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical Inventory.

Canada: All components of this product are included on the Domestic Substances List (DSL) or are not required to be listed on the DSL.

European Economic Area (including EU): Cytec has appointed an Only Representative to relieve our customers from their registration requirements under the REACH Regulation (EC) No. 1907/2006. Please contact us if you wish to benefit from the OR arrangement.

Australia: All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on AICS.

China: All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.

Japan: All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese inventory.

Korea: All components of this product are included on the Korean (ECL) inventory or are not required to be listed on the Korean inventory.

Philippines: All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine inventory.

Taiwan: All components of this product are included on the Taiwan Chemical Substance Inventory (TCSI) or are not required to be listed on the Taiwan inventory.

OTHER ENVIRONMENTAL INFORMATION

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

Component / CAS No.	%	TPQ (lbs)	RQ(lbs)	S313	TSCA 12B
Methylenediphenyl diisocyanate (MDI) 101-68-8	30 - 40	None	5000	Yes	No
1,1'- Methylenebis [isocyanatobenzene] 26447-40-5	15 - 25	None		Yes(as Diisocyanates)	No
Polymeric Diphenylmethane Diisocyanate (pMDI) 9016-87-9	40 - 50	None		Yes	No

PRODUCT HAZARD CLASSIFICATION UNDER SECTION 311 OF SARA

- Acute
- Chronic

---

16. OTHER INFORMATION

NFPA Hazard Rating (National Fire Protection Association)

Health: 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

Fire: 1 - Materials that must be preheated before ignition can occur.

Instability: 1 - Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures.

Special: Water Reactive

Reasons For Issue: Revised Section 1
Revised Section 9
Revised Section 14
Revised Section 16

Date Prepared: 03/08/2016
Date of last significant revision: 03/08/2016

Component Hazard Phrases

Polymeric Diphenylmethane Diisocyanate (pMDI)

H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
H332 - Harmful if inhaled.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 - May cause respiratory irritation.
H373 - May cause damage to organs through prolonged or repeated exposure.

Methylenediphenyl diisocyanate (MDI)

H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
H332 - Harmful if inhaled.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 - May cause respiratory irritation.
H351 - Suspected of causing cancer.
H373 - May cause damage to organs through prolonged or repeated exposure.

1,1'- Methylenebis [isocyanatobenzene]

H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
H332 - Harmful if inhaled.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 - May cause respiratory irritation.
H351 - Suspected of causing cancer.
H373 - May cause damage to organs through prolonged or repeated exposure.

Prepared By: Legal & Compliance Services; E-mail: custinfo@cytec.com