Material Safety Data Sheet
The Dow Chemical Company

Product Name: QUICK-CURE PRIMERLESS URETHANE U418 **Issue Date:** 10/14/2011
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The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
QUICK-CURE PRIMERLESS URETHANE U418

COMPANY IDENTIFICATION
The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
USA

Customer Information Number: 800-258-2436

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 989-636-4400
Local Emergency Contact: 989-636-4400

2. Hazards Identification

Emergency Overview
Color: Black
Physical State: Paste
Odor: Solvent
Hazards of product:

WARNING! May cause allergic skin reaction. May cause allergic respiratory reaction. May cause eye irritation. May cause skin irritation. May cause central nervous system effects. May cause respiratory tract irritation. Isolate area. Keep upwind of spill.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects
Eye Contact: May cause eye irritation.
Skin Contact: Prolonged contact may cause skin irritation with local redness.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Skin Sensitization: Skin contact may cause an allergic skin reaction. Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization.
Inhalation: At room temperature, exposure to vapor is minimal due to low volatility. Vapor from heated material may cause respiratory irritation and other effects. May cause central nervous system effects. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. For the minor component(s): Methylene diphenyl diisocyanate (MDI). Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Alcohol consumption and exertion may increase the adverse effects of toluene. This material contains mineral and/or inorganic fillers. There is essentially no potential for inhalation exposure to these fillers incidental to industrial handling due to the physical state. May cause pulmonary edema (fluid in the lungs.) Decreased lung function has been associated with overexposure to isocyanates. May cause nausea and vomiting.
Respiratory Sensitization: May cause allergic respiratory response. MDI concentrations below the exposure guidelines may cause allergic respiratory reactions in individuals already sensitized. Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.
Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea.
Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.
Effects of Repeated Exposure: Contains component(s) which have been reported to cause effects on the following organs in animals: Liver. Kidney. Central nervous system. Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols. Toluene has caused hearing loss in laboratory animals upon exposure to high concentrations. Intentional misuse by deliberately inhaling toluene may cause nervous system damage, hearing loss, liver and kidney effects and death.
Cancer Information: Contains a phthalate ester which has caused cancer in rats and mice given high dietary doses. The material is considered to be a weak carcinogen in rodents but is not believed to pose a carcinogenic risk to humans at typical use conditions. Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m3) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.
Birth Defects/Developmental Effects: Contains component(s) which did not cause birth defects in animals; other fetal effects occurred only at doses toxic to the mother. In laboratory animals, MDI/polymeric MDI did not cause birth defects; other fetal effects occurred only at high doses which were toxic to the mother. Contains component(s) which caused birth defects in laboratory animals only at doses toxic to the mother.
Reproductive Effects: For the phthalate ester(s): In laboratory animals, excessive doses toxic to the parent animals caused decreased weight and survival of offspring.

3. Composition Information

Component	CAS #	Amount
MDI BASED URETHANE POLYMER P93-1485	Not available	> 35.0 - < 45.0 %
Carbon black	1333-86-4	> 20.0 - < 30.0 %
Diisononyl phthalate	28553-12-0	> 15.0 - < 25.0 %
Phthalic acid, di-C8-10-branched alkyl esters, C9-rich	68515-48-0	> 15.0 - < 25.0 %
Calcined clay	66402-68-4	> 5.0 - < 15.0 %
Toluene	108-88-3	< 10.0 %
4,4' -Methylenediphenyl diisocyanate	101-68-8	< 1.0 %
Hexamethylene-1,6-diisocyanate homopolymer	28182-81-2	< 1.0 %

4. First-aid measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.
Skin Contact: Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. An MDI skin decontamination study demonstrated that cleaning very soon after exposure is important, and that a polyglycol-based skin cleanser or corn oil may be more effective than soap and water. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Safety shower should be located in immediate work area.
Eye Contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.
Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Maintain adequate ventilation and oxygenation of the patient. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants and antitussives may be of help. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. If you are sensitized to diisocyanates, consult your physician regarding working with other respiratory irritants or sensitizers. Alcohol consumed before or after exposure may increase adverse effects. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.
Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

5. Fire Fighting Measures

Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective. Water fog, applied gently may be used as a blanket for fire extinguishment.
Extinguishing Media to Avoid: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide. Combustion products may include trace amounts of: Hydrogen cyanide.
Unusual Fire and Explosion Hazards: Product reacts with water. Reaction may produce heat and/or gases. Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Ventilate area of leak or spill. Refer to Section 7, Handling, for additional precautionary measures. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Vapor explosion hazard. Keep out of sewers. See Section 10 for more specific information. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Cat litter. Sand. Sawdust. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling
General Handling: Keep away from heat, sparks and flame. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Avoid breathing vapor. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage
Minimize sources of ignition, such as static build-up, heat, spark or flame. Store in tightly closed, properly vented containers. Protect from atmospheric moisture. Store indoors. Store in a dry place. Do not store product contaminated with water to prevent potential hazardous reaction.

Shelf life: Use within	**Storage temperature:**
9 Months	10 - 35 °C

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
4,4' -Methylenediphenyl diisocyanate	ACGIH	TWA	0.005 ppm
	OSHA Table Z-1	Ceiling	0.2 mg/m3 0.02 ppm
Toluene	ACGIH	TWA	20 ppm BEI
	OSHA/Z2	TWA	200 ppm
	OSHA/Z2	Ceiling	300 ppm
	OSHA/Z2	MAX. CONC	500 ppm 10 minutes

Although some of the fillers used in this product may have exposure guidelines, no exposure would be expected under normal handling conditions because of the physical state of the material.
A BEI notation following the exposure guideline refers to a guidance value for assessing biological monitoring results as an indicator of the uptake of a substance from all routes of exposures.

Personal Protection

Eye/Face Protection: Use safety glasses (with side shields).
Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Atmospheric levels should be maintained below the exposure guideline. When atmospheric levels may exceed the exposure guideline, use an approved air-purifying respirator equipped with an organic vapor sorbent and a particle filter. For situations where the atmospheric levels may exceed the level for which an air-purifying respirator is effective, use a positive-pressure air-supplying respirator (air line or self-contained breathing apparatus). For emergency response or for situations where the atmospheric level is unknown, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.
Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. The odor and irritancy of this material are inadequate to warn of excessive exposure.

9. Physical and Chemical Properties

Appearance	
Physical State	Paste
Color	Black
Odor	Solvent
Odor Threshold	No test data available

pH	No test data available
Melting Point	No test data available
Freezing Point	No test data available
Boiling Point (760 mmHg)	No test data available.
Flash Point - Closed Cup	Not applicable
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No
Flammable Limits In Air	**Lower**: No test data available **Upper**: No test data available
Vapor Pressure	No test data available
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	1.19 *ASTM D1475*
Solubility in water (by weight)	No test data available
Partition coefficient, n-octanol/water (log Pow)	No test data available
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Kinematic Viscosity	Not applicable
Explosive properties	no data available
Oxidizing properties	no data available
Volatile Organic Compounds	0.41 lb/gal *EPA Method No. 24* (typical value)

10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.

Chemical stability
Stable under recommended storage conditions. See Storage, Section 7.

Possibility of hazardous reactions
Polymerization will not occur.

Conditions to Avoid: Some components of this product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems. Avoid moisture. Material reacts slowly with water, releasing carbon dioxide which can cause pressure buildup and rupture of closed containers. Elevated temperatures accelerate this reaction.

Incompatible Materials: Reaction with water will generate heat. Avoid contact with: Acids. Alcohols. Amines. Water. Ammonia. Bases. Metal compounds. Moist air. Strong oxidizers. Reaction with water will generate carbon dioxide.

Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Gases are released during decomposition.

11. Toxicological Information

Acute Toxicity
Ingestion
Single dose oral LD50 has not been determined.
Dermal

The dermal LD50 has not been determined.

Inhalation

The LC50 has not been determined.

Eye damage/eye irritation

May cause eye irritation.

Skin corrosion/irritation

Prolonged contact may cause skin irritation with local redness.

Sensitization

Skin

Skin contact may cause an allergic skin reaction. Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization.

Respiratory

May cause allergic respiratory response. MDI concentrations below the exposure guidelines may cause allergic respiratory reactions in individuals already sensitized. Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

Repeated Dose Toxicity

Contains component(s) which have been reported to cause effects on the following organs in animals: Liver. Kidney. Central nervous system. Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols. Toluene has caused hearing loss in laboratory animals upon exposure to high concentrations. Intentional misuse by deliberately inhaling toluene may cause nervous system damage, hearing loss, liver and kidney effects and death.

Chronic Toxicity and Carcinogenicity

Contains a phthalate ester which has caused cancer in rats and mice given high dietary doses. The material is considered to be a weak carcinogen in rodents but is not believed to pose a carcinogenic risk to humans at typical use conditions. Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m3) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI. For the phthalate ester(s): Kidney effects and/or tumors have been observed in male rats. These effects are believed to be species specific and unlikely to occur in humans. Liver effects and/or tumors have been observed in rats. These effects are believed to be species specific and unlikely to occur in humans.

Developmental Toxicity

Contains component(s) which did not cause birth defects in animals; other fetal effects occurred only at doses toxic to the mother. In laboratory animals, MDI/polymeric MDI did not cause birth defects; other fetal effects occurred only at high doses which were toxic to the mother. Contains component(s) which caused birth defects in laboratory animals only at doses toxic to the mother.

Reproductive Toxicity

For the phthalate ester(s): In laboratory animals, excessive doses toxic to the parent animals caused decreased weight and survival of offspring. There were no effects on fertility at any dose. For the phthalate ester component: Minimal effects on reproduction considered secondary to parental toxicity were observed when given to animals at very high dietary doses. A lower dose produced parental toxicity but no reproductive effects. There were no effects on fertility at any dose.

Genetic Toxicology

For the phthalate ester(s): In vitro genetic toxicity studies were negative. Genetic toxicity data on MDI are inconclusive. MDI was weakly positive in some in vitro studies; other in vitro studies were negative. Animal mutagenicity studies were predominantly negative. The majority and most reliable of the many genetic toxicity studies on toluene, both in vitro and in animals, indicate that it is not genetically toxic.

12. Ecological Information

Toxicity

Data for Component: **MDI BASED URETHANE POLYMER P93-1485**

Not expected to be acutely toxic to aquatic organisms.

Data for Component: **Carbon black**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, golden orfe (Leuciscus idus), static, 96 h: > 1,000 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, 24 h, immobilization: > 5,600 mg/l

Data for Component: **Diisononyl phthalate**
Toxicity to aquatic species occurs at concentrations above material's water solubility.

Data for Component: **Phthalic acid, di-C8-10-branched alkyl esters, C9-rich**
Toxicity to aquatic species occurs at concentrations above material's water solubility.

Data for Component: **Calcined clay**
Not expected to be acutely toxic to aquatic organisms.

Data for Component: **Toluene**
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 h: 5.8 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, Daphnia magna (Water flea), static test, 24 h, immobilization: 7 mg/l
Aquatic Plant Toxicity
EbC50, Pseudokirchneriella subcapitata (green algae), biomass growth inhibition, 72 h: 12.5 mg/l
Toxicity to Micro-organisms
IC50; Bacteria, 16 h: 29 mg/l
Aquatic Invertebrates Chronic Toxicity Value
Daphnia magna (Water flea), 21 d, number of offspring, NOEC: 2 mg/l
Toxicity to Soil Dwelling Organisms
LC50, Eisenia fetida (earthworms): 150 - 280 mg/kg

Data for Component: **4,4' -Methylenediphenyl diisocyanate**
The measured ecotoxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species. Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
Based on information for a similar material: LC50, Danio rerio (zebra fish), static, 96 h: > 1,000 mg/l
Aquatic Invertebrate Acute Toxicity
Based on information for a similar material: EC50, water flea Daphnia magna, static, 24 h: > 1,000 mg/l
Aquatic Plant Toxicity
Based on information for a similar material: NOEC, Scenedesmus subspicatus (new name: Desmodesmus subspicatus), static, Growth rate inhibition, 72 h: 1,640 mg/l
Toxicity to Micro-organisms
Based on information for a similar material: EC50; activated sludge, static, 3 h: > 100 mg/l
Toxicity to Soil Dwelling Organisms
EC50, Earthworm Eisenia foetida, adult, 14 d: > 1,000 mg/kg

Data for Component: **Hexamethylene-1,6-diisocyanate homopolymer**
For the major component(s): Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
NOEC mortality, zebra fish (Brachydanio rerio), static, 96 h: > 100 mg/l
Aquatic Invertebrate Acute Toxicity
NOEC, water flea Daphnia magna, static, 48 h, immobilization: > 100 mg/l
Aquatic Plant Toxicity

EC50, alga Scenedesmus sp., static, biomass growth inhibition, 72 h: > 1,000 mg/l
Toxicity to Micro-organisms
EC50, OECD 209 Test; activated sludge, 3 h: > 1,000 mg/l

Persistence and Degradability

Data for Component: **MDI BASED URETHANE POLYMER P93-1485**

Surface photodegradation is expected with exposure to sunlight. No appreciable biodegradation is expected.

Data for Component: **Carbon black**

Biodegradation is not applicable.

Data for Component: **Diisononyl phthalate**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
74 %	28 d	OECD 301C Test	Not applicable
> 99 %	28 d	OECD 302A Test	Not applicable

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.34E-11 cm3/s	5.487 h	Estimated.

Theoretical Oxygen Demand: 2.64 mg/mg

Data for Component: **Phthalic acid, di-C8-10-branched alkyl esters, C9-rich**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
74 %	28 d	OECD 301C Test	Not applicable
> 99 %	28 d	OECD 302A Test	Not applicable

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.34E-11 cm3/s	5.487 h	Estimated.

Theoretical Oxygen Demand: 2.64 mg/mg

Data for Component: **Calcined clay**

Biodegradation is not applicable.

Data for Component: **Toluene**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
100 %	14 d	OECD 301C Test	Not applicable

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
5.23E-12 cm3/s	2 d	Estimated.

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
53 - 56 %		59 - 80 %	

Theoretical Oxygen Demand: 3.13 mg/mg

Data for Component: **4,4' -Methylenediphenyl diisocyanate**

In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates.

OECD Biodegradation Tests: Based on information for a similar material:

Biodegradation	Exposure Time	Method	10 Day Window
0 %	28 d	OECD 302C Test	Not applicable

Data for Component: **Hexamethylene-1,6-diisocyanate homopolymer**

For this family of materials: In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
0 %	28 d	No data available.	fail

Bioaccumulative potential

Data for Component: **MDI BASED URETHANE POLYMER P93-1485**

Bioaccumulation: No bioconcentration is expected because of the relatively high molecular weight (MW greater than 1000).

Data for Component: **Carbon black**

Bioaccumulation: No data available.
Bioconcentration Factor (BCF): No data available.

Data for Component: **Diisononyl phthalate**

Bioaccumulation: Bioconcentration potential is low (BCF less than 100 or log Pow greater than 7).
Partition coefficient, n-octanol/water (log Pow): 9.37 Estimated.

Data for Component: **Phthalic acid, di-C8-10-branched alkyl esters, C9-rich**

Bioaccumulation: Bioconcentration potential is low (BCF less than 100 or log Pow greater than 7).
Partition coefficient, n-octanol/water (log Pow): 9.37 Estimated.

Data for Component: **Calcined clay**

Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Data for Component: **Toluene**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 2.73 Measured
Bioconcentration Factor (BCF): 13.2 - 90; fish; Measured

Data for Component: **4,4' -Methylenediphenyl diisocyanate**

Bioaccumulation: In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

Data for Component: **Hexamethylene-1,6-diisocyanate homopolymer**

Bioaccumulation: For this family of materials: In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

Mobility in soil

Data for Component: **MDI BASED URETHANE POLYMER P93-1485**

Mobility in soil: No relevant data found.

Data for Component: **Carbon black**

Mobility in soil: No relevant data found.

Data for Component: **Diisononyl phthalate**

Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient, soil organic carbon/water (Koc): > 5,000 Estimated.
Henry's Law Constant (H): 1.49E-06 atm*m3/mole; 25 °C Estimated.

Data for Component: **Phthalic acid, di-C8-10-branched alkyl esters, C9-rich**

Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient, soil organic carbon/water (Koc): > 5,000 Estimated.
Henry's Law Constant (H): 1.49E-06 atm*m3/mole; 25 °C Estimated.

Data for Component: **Calcined clay**

Mobility in soil: No relevant data found.

Data for Component: **Toluene**

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 37 - 178 Estimated.
Henry's Law Constant (H): 6.46E-03 atm*m3/mole; 25 °C Estimated.

Data for Component: **4,4' -Methylenediphenyl diisocyanate**

Mobility in soil: In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

Data for Component: **Hexamethylene-1,6-diisocyanate homopolymer**

Mobility in soil: No relevant data found.

13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

Treatment and disposal methods of used packaging: Empty containers should be recycled or otherwise disposed of by an approved waste management facility. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. Do not re-use containers for any purpose.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical Name: TOLUENE
Hazard Class: 9 **ID Number:** UN3077 **Packing Group:** PG III

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED
Additional Information

Reportable quantity: 10,000 lb – TOLUENE

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

Component	CAS #	Amount
Toluene	108-88-3	< 10.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Carbon black	1333-86-4	> 20.0 - < 30.0 %
Diisononyl phthalate	28553-12-0	> 15.0 - < 25.0 %
Phthalic acid, di-C8-10-branched alkyl esters, C9-rich	68515-48-0	> 15.0 - < 25.0 %
Toluene	108-88-3	< 10.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)
The following product components are cited in the New Jersey Environmental Hazardous and Workplace Hazardous Substance Lists:

Component	CAS #	Amount
Carbon black	1333-86-4	> 20.0 - < 30.0 %
Toluene	108-88-3	< 10.0 %

US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)
The following product components are cited in the New Jersey Special Hazardous Substance List:

Component	CAS #	Amount
Carbon black	1333-86-4	> 20.0 - < 30.0 %
Toluene	108-88-3	< 10.0 %

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

US. Toxic Substances Control Act

All components of this product are either on the TSCA Inventory, are exempt from TSCA Inventory Requirements under 40 CFR 720.30, or comply with the PMN Polymer Exemption 40 CFR 723.250.

16. Other Information

Recommended Uses and Restrictions

Identified uses

A urethane adhesive -- For use in automotive applications.

Revision

Identification Number: 51010 / 0000 / Issue Date 10/14/2011 / Version: 17.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

The Dow Chemical Company urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.