



Material Safety Data Sheet

Dow Chemical Canada, Inc

Product Name: QUICK-CURE PRIMERLESS URETHANE U418

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Dow Chemical Canada, Inc 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

Dow Chemical Canada, Inc
A Subsidiary of The Dow Chemical Company
PO Box 3030
1425 Vidal Street South
Sarnia, ON N7T 8C6
Canada

For MSDS updates and Product Information: 800-331-6451

Prepared By: Prepared for use in Canada by EH&S, Product Regulatory
Management Department.
450-652-1029

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Customer Information Number: 800-331-6451

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 519-339-3711

Local Emergency Contact: 519-339-3711

2. Hazards Identification

Emergency Overview

Color: Black

Physical State: Paste

Odor: Solvent

Hazards of product:

WARNING! May cause allergic skin reaction. May cause eye irritation. May cause skin irritation. May cause respiratory tract irritation. May cause central nervous system effects. May cause allergic respiratory reaction. Combustible.

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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): 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.

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 on ingredients

Component	CAS #	Amount w/w
MDI BASED URETHANE POLYMER P93-1485		> 35.0 - < 45.0 %
Carbon black	1333-86-4	> 20.0 - < 30.0 %
Diheptyl phthalate, branched and linear	68515-44-6	> 15.0 - < 25.0 %
Dinonyl phthalate, branched and linear	68515-45-7	> 15.0 - < 25.0 %
Di(nonyl-undecyl) phthalate, branched and linear	111381-91-0	> 15.0 - < 25.0 %
Di(heptyl-nonyl) phthalate, branched and linear	111381-89-6	> 15.0 - < 25.0 %

Di(heptyl-undecyl) phthalate, branched and linear	111381-90-9	> 15.0 - < 25.0 %
Diundecyl phthalate, branched and linear	85507-79-5	> 15.0 - < 25.0 %
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 %

Amounts are presented as percentages by weight.

4. First-aid measures

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.

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.

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.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Notes to Physician: Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. 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.

Medical Conditions Aggravated by Exposure: Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

5. Fire Fighting Measures

Extinguishing Media: Carbon dioxide fire extinguishers. Dry chemical fire extinguishers. Water fog or fine spray. Foam.

Extinguishing Media to Avoid: Do not use direct water stream.

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Soak thoroughly with water to cool and prevent re-ignition. Cool surroundings with water to localize fire zone. Hand held dry chemical or carbon dioxide extinguishers may be used for small fires.

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).

Unusual Fire and Explosion Hazards: None known.

Hazardous Combustion Products: Hazardous combustion by-products may include but are not limited to carbon dioxide and carbon monoxide.

See Section 9 for related Physical Properties

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Absorb with materials such as: Cat litter. Sand. Sawdust. Use non-sparking tools in cleanup operations. Ground and bond all containers and handling equipment. Contain spilled material if possible. Absorb with materials such as: Cat litter. Sand. Sawdust.

Ignition Sources Removal: 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. Ignition sources can include and are not limited to pilot lights, flames, smoking, sparks, heaters, electrical equipment, and static discharges. Not applicable.

Dust Control: Not applicable. Not applicable.

Personal Precautions: Isolate area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. 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. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Inhalation, Skin, Mucous and Eye Contact Prevention: 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. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage

Handling

General Handling: Use with adequate ventilation. Wash thoroughly after handling. Avoid prolonged contact with eyes, skin and clothing. Avoid breathing vapor. Keep container closed. Keep away from heat, sparks and flame. Do not cut or weld container. No smoking, open flames or sources of ignition in handling and storage area.

Storage

Store in tightly closed, properly vented containers. Store in a dry place. Store indoors. Flammable mixtures may exist within the vapor space of containers at room temperature. Minimize sources of ignition, such as static build-up, heat, spark or flame.

Storage temperature: 10 - 35 °C

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
4,4' -Methylenediphenyl diisocyanate	OEL (QUE)	TWA	0.051 mg/m ³ 0.005 ppm SEN
			Exposure must be minimized.
	ACGIH	TWA	0.005 ppm
	CAD AB OEL	TWA	0.051 mg/m ³ 0.005 ppm
	CAD BC OEL	TWA	0.005 ppm SKIN
	CAD BC OEL	CEILING	0.01 ppm SKIN
	CAD ON OEL	TWA	0.005 ppm
	CAD ON OEL	CEILING	0.02 ppm
Toluene	CAD AB OEL	TWA	188 mg/m ³ 50 ppm SKIN
	CAD BC OEL	TWA	50 ppm SKIN

CAD ON OEL	TWA	50 ppm	SKIN
ACGIH	TWA	20 ppm	
OEL (QUE)	TWA	188 mg/m3	50 ppm
OEL (QUE)	SKIN_DES		

Can be absorbed through the skin.

Consult local authorities for recommended exposure limits.

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 "SEN" notation following the exposure guideline refers to the potential to produce sensitization, as confirmed by human or animal data.

A "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.

It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

Personal Protection

Eye/Face Protection: Use safety glasses. Eye wash fountain should be located in immediate work area.

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. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly.

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: Natural rubber ("latex"). 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

Physical State	Paste
Color	Black
Odor	Solvent
Flash Point - Closed Cup	54.44 °C ASTM D3278

Flammable Limits In Air	Lower: No test data available Upper: No test data available
Autoignition Temperature	No test data available
Vapor Pressure	No test data available
Boiling Point (760 mmHg)	No test data available.
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	1.19 <i>ASTM D1475</i>
Freezing Point	No test data available
Melting Point	No test data available
Solubility in Water (by weight)	No test data available
pH	No test data available
Volatile Organic Compounds	0.41 lb/gal <i>EPA Method No. 24</i> (typical value)

10. Stability and Reactivity

Stability/Instability

Stable.

Incompatible Materials: Strong oxidizers.

Hazardous Polymerization

Will not occur.

Thermal Decomposition

Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Fumes.

11. Toxicological Information

Acute Toxicity

Ingestion

Single dose oral LD50 has not been determined.

Skin Absorption

The dermal LD50 has not been determined.

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.

Component Toxicology - Toluene

Skin Absorption	LD50, Rabbit 14,000 mg/kg
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Component Toxicology - 4,4'-Methylenediphenyl diisocyanate

Skin Absorption	Typical for this family of materials. LD50, Rabbit > 2,000 mg/kg
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Component Toxicology - Toluene

Inhalation	LC50, 4 h, Rat 8,800 ppm
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Component Toxicology - 4,4'-Methylenediphenyl diisocyanate

Inhalation	LC50, Aerosol, Rat 490 mg/m ³
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Component Toxicology - Toluene

Ingestion	LD50, Rat 5,580 mg/kg
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Component Toxicology - 4,4'-Methylenediphenyl diisocyanate

Ingestion	Typical for this family of materials. LD50, Rat > 10,000 mg/kg
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12. Ecological Information

CHEMICAL FATE

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

Movement & Partitioning

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

Persistence and Degradability

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

Data for Component: **Carbon black**

Movement & Partitioning

|| Partitioning from water to n-octanol is not applicable.

Persistence and Degradability

|| Biodegradation is not applicable.

Data for Component: Diheptyl phthalate, branched and linear**Movement & Partitioning**

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3).

Bioconcentration Factor (BCF): 27; fish; Measured

Persistence and Degradability

Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
65 %	28 d	OECD 302A Test

Data for Component: Dinonyl phthalate, branched and linear**Movement & Partitioning**

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3).

Bioconcentration Factor (BCF): 27; fish; Measured

Persistence and Degradability

Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
65 %	28 d	OECD 302A Test

Data for Component: Di(nonyl-undecyl) phthalate, branched and linear**Movement & Partitioning**

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3).

Bioconcentration Factor (BCF): 27; fish; Measured

Persistence and Degradability

Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
65 %	28 d	OECD 302A Test

Data for Component: Di(heptyl-nonyl) phthalate, branched and linear**Movement & Partitioning**

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3).

Bioconcentration Factor (BCF): 27; fish; Measured

Persistence and Degradability

Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
65 %	28 d	OECD 302A Test

Data for Component: Di(heptyl-undecyl) phthalate, branched and linear**Movement & Partitioning**

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3).

Bioconcentration Factor (BCF): 27; fish; Measured

Persistence and Degradability

Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
65 %	28 d	OECD 302A Test

Data for Component: Diundecyl phthalate, branched and linear**Movement & Partitioning**

Bioconcentration potential is low (BCF less than 100 or log Pow greater than 7). Expected to be relatively immobile in soil (Koc > 5000).

Henry's Law Constant (H): 1.14e-04 atm*m3/mole; 25 °C Estimated

Partition coefficient, n-octanol/water (log Pow): 11.49 Estimated

Partition coefficient, soil organic carbon/water (Koc): > 5,000 Estimated

Persistence and Degradability

Based largely or completely on information for similar material(s). Material is expected to be readily biodegradable.

Data for Component: Diisononyl phthalate**Movement & Partitioning**

Bioconcentration potential is low (BCF less than 100 or log Pow greater than 7). Expected to be relatively immobile in soil (Koc > 5000).

Henry's Law Constant (H): 1.49E-06 atm*m3/mole; 25 °C Estimated

Partition coefficient, n-octanol/water (log Pow): 9.37 Estimated

Partition coefficient, soil organic carbon/water (Koc): > 5,000 Estimated

Persistence and Degradability

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

Indirect Photodegradation with OH Radicals

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

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
> 90 %	5.5 d	OECD 302B Test

Theoretical Oxygen Demand: 2.64 mg/mg

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

Bioconcentration potential is low (BCF less than 100 or log Pow greater than 7). Expected to be relatively immobile in soil (Koc > 5000).

Henry's Law Constant (H): 1.49E-06 atm*m3/mole; 25 °C Estimated

Partition coefficient, n-octanol/water (log Pow): 9.37 Estimated

Partition coefficient, soil organic carbon/water (Koc): > 5,000 Estimated

Persistence and Degradability

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

Indirect Photodegradation with OH Radicals

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

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
> 90 %	5.5 d	OECD 302B Test

Theoretical Oxygen Demand: 2.64 mg/mg

Data for Component: Toluene**Movement & Partitioning**

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is very high (Koc between 0 and 50).

Henry's Law Constant (H): 6.46E-03 atm*m3/mole; 25 °C Estimated

Partition coefficient, n-octanol/water (log Pow): 2.73 Measured

Partition coefficient, soil organic carbon/water (Koc): 37 - 178 Estimated

Bioconcentration Factor (BCF): 13.2 - 90; fish; Measured

Persistence and Degradability

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

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
5.23E-12 cm ³ /s	2 d	Estimated

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
100 %	14 d	OECD 301C Test

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

Movement & Partitioning

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

Persistence and Degradability

|| 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.

ECOTOXICITY

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 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

|| LC50, golden orfe (*Leuciscus idus*): > 1,000 mg/l

Aquatic Invertebrate Acute Toxicity

|| EC50, water flea *Daphnia magna*, immobilization: > 5,600 mg/l

Data for Component: Diheptyl phthalate, branched and linear

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

Fish Acute & Prolonged Toxicity

LC50, rainbow trout (*Oncorhynchus mykiss*): > 500 mg/l

Aquatic Invertebrate Acute Toxicity

LC50, water flea *Daphnia magna*: > 100 mg/l

Aquatic Plant Toxicity

EC50, green alga *Selenastrum capricornutum*, biomass growth inhibition: > 1,000 mg/l

Fish Chronic Toxicity Value (ChV):

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
> 0.265 mg/l	fish			

Aquatic Invertebrates Chronic Toxicity Value:

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
0.13 mg/l	water flea <i>Daphnia magna</i>		number of offspring	21 d

Data for Component: Dinonyl phthalate, branched and linear

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

Fish Acute & Prolonged ToxicityLC50, rainbow trout (*Oncorhynchus mykiss*): > 500 mg/l**Aquatic Invertebrate Acute Toxicity**LC50, water flea *Daphnia magna*: > 100 mg/l**Aquatic Plant Toxicity**EC50, green alga *Selenastrum capricornutum*, biomass growth inhibition: > 1,000 mg/l**Fish Chronic Toxicity Value (ChV):**

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
> 0.265 mg/l	fish			

Aquatic Invertebrates Chronic Toxicity Value:

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
0.13 mg/l	water flea <i>Daphnia magna</i>		number of offspring	21 d

Data for Component: Di(nonyl-undecyl) phthalate, branched and linear

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

Fish Acute & Prolonged ToxicityLC50, rainbow trout (*Oncorhynchus mykiss*): > 500 mg/l**Aquatic Invertebrate Acute Toxicity**LC50, water flea *Daphnia magna*: > 100 mg/l**Aquatic Plant Toxicity**EC50, green alga *Selenastrum capricornutum*, biomass growth inhibition: > 1,000 mg/l**Fish Chronic Toxicity Value (ChV):**

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
> 0.265 mg/l	fish			

Aquatic Invertebrates Chronic Toxicity Value:

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
0.13 mg/l	water flea <i>Daphnia magna</i>		number of offspring	21 d

Data for Component: Di(heptyl-nonyl) phthalate, branched and linear

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

Fish Acute & Prolonged ToxicityLC50, rainbow trout (*Oncorhynchus mykiss*): > 500 mg/l**Aquatic Invertebrate Acute Toxicity**LC50, water flea *Daphnia magna*: > 100 mg/l**Aquatic Plant Toxicity**EC50, green alga *Selenastrum capricornutum*, biomass growth inhibition: > 1,000 mg/l**Fish Chronic Toxicity Value (ChV):**

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
> 0.265 mg/l	fish			

Aquatic Invertebrates Chronic Toxicity Value:

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
0.13 mg/l	water flea <i>Daphnia magna</i>		number of offspring	21 d

Data for Component: Di(heptyl-undecyl) phthalate, branched and linear

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

Fish Acute & Prolonged ToxicityLC50, rainbow trout (*Oncorhynchus mykiss*): > 500 mg/l**Aquatic Invertebrate Acute Toxicity**

LC50, water flea Daphnia magna: > 100 mg/l

Aquatic Plant Toxicity

EC50, green alga Selenastrum capricornutum, biomass growth inhibition: > 1,000 mg/l

Fish Chronic Toxicity Value (ChV):

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
> 0.265 mg/l	fish			

Aquatic Invertebrates Chronic Toxicity Value:

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
0.13 mg/l	water flea Daphnia magna		number of offspring	21 d

Data for Component: Diundecyl phthalate, branched and linear

|| Not expected to be acutely toxic to aquatic organisms.

Fish Acute & Prolonged Toxicity

|| NOEC sublethal, rainbow trout (Oncorhynchus mykiss), flow-through, 96 h: 1.4 mg/l

Aquatic Invertebrate Acute Toxicity

|| NOEC, water flea Daphnia magna, 48 h, immobilization: 1.0 mg/l

Aquatic Plant Toxicity

|| LC50, green alga Selenastrum capricornutum, biomass growth inhibition, 96 h: > 1,000 mg/l

Aquatic Invertebrates Chronic Toxicity Value:

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
	water flea Daphnia magna		number of offspring	21 d

Data for Component: Diisononyl phthalate

|| Not expected to be acutely toxic to aquatic organisms.

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

|| 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 most sensitive species tested).

Fish Acute & Prolonged Toxicity

|| LC50, bluegill (Lepomis macrochirus): 12.7 - 340 mg/l

Aquatic Invertebrate Acute Toxicity

|| LC50, water flea Daphnia magna: 60 - 313 mg/l

|| LC50, bay shrimp Crangon franciscorum: 3.7 mg/l

Aquatic Plant Toxicity

|| EC50, green alga Selenastrum capricornutum, biomass growth inhibition: > 433 mg/l

Toxicity to Micro-organisms

|| IC50; bacteria, Growth inhibition, 16 h: 29 mg/l

Toxicity to Soil Dwelling Organisms

|| LC50, Earthworm Eisenia foetida, adult: 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 >100 mg/L in the most sensitive species tested).

Toxicity to Soil Dwelling Organisms

|| LC50, Earthworm Eisenia foetida, adult, 14 d: > 1,000 mg/kg

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. As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Group at 1-800-258-2436 or 1-989-832-1556 (U.S.), or 1-800-331-6451 (Canada) for further details.

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

TDG Small container

NOT REGULATED

TDG Large container

NOT REGULATED

IMDG

NOT REGULATED

ICAO/IATA

NOT REGULATED

15. Regulatory Information

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.

European Inventory of Existing Commercial Chemical Substances (EINECS)

The components of this product are on the EINECS inventory or are exempt from inventory requirements.

CEPA - Domestic Substances List (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

China. Inventory of Existing Chemical Substances

This product is listed on, or complies with, the State Environmental Protection Agency (SEPA) China Chemical Inventory.

Korea Existing Chemicals Inventory (KECI)

The components of this product are on the Korea Existing Chemicals Inventory (KECI) or are exempt from the inventory requirements.

Philippines Inventory of Chemicals and Chemical Substances (PICCS) List

The components of this product are on the Philippines Inventory of Chemical and Chemical Substances (PICCS) or are exempt from the inventory requirements.

Hazardous Products Act Information: CPR Compliance

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Hazardous Products Act Information: WHMIS Classification

B3	Combustible Liquid with a Flash Point of 37.8°C or more but less than 93.3°C
D2A	Possible, Probable or Known Human Carcinogen According to Classifications By IARC or ACGIH
D2A	Respiratory Tract Sensitizer
D2B	Skin Sensitizer

Hazardous Products Act Information: Hazardous Ingredients

This product contains the following ingredients which are Controlled Products and/or are on the Ingredient Disclosure List (Canadian HPA Section 13 and 14).

Component	CAS #	Amount W/W
Carbon black	1333-86-4	> 20.0 - < 30.0 %
4,4' -Methylenediphenyl diisocyanate	101-68-8	> 0.1 - < 1.0 %
Toluene	108-88-3	> 5.0 - < 10.0 %

16. Other Information**Hazard Rating System**

NFPA	Health	Fire	Reactivity
	1	2	1

Recommended Uses and Restrictions

A urethane adhesive -- For use in automotive applications.

Revision

Identification Number: 51010 / 1002 / Issue Date 2008.04.08 / Version: 13.0

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
VOL/VOL	Volume/Volume

Dow Chemical Canada, Inc 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.