Technical Service Information

TSI–06–16–08

Date: November, 2006

Subject File: CAB

Subject: Bonded Windshield Glass Replacement Sealant Kit 2592784C91 Requires New Dispenser

DESCRIPTION

The 2 part windshield adhesive is being replaced in service with a 1 part adhesive. The 3 primers now have new part numbers assigned.

PARTS INFORMATION

Table 1

New Part Number	Old Part Number	Description
2592784C91	3522505R1	Windshield Sealant Kit

SERVICE PROCEDURE

WARNING – To avoid personal injury or death, wear safety glasses with side shields, paint and body shop mask and outer clothing when performing windshield replacement and using this sealant.

**** Discontinue use of part #3522505R1 Sealant. Start using part # 2592784C91**

International® offers a dispenser through the ISN tool program, Part number IMLW656024. You can also use a Dow, Cox, Milwaukee or 3M dispenser. The dispenser must be able to receive a 10 oz cartridge and have enough power to dispense high viscosity adhesives/sealants. A cordless dispenser is highly recommended. Make sure the dispenser comes with a 10 oz cartridge holder, battery and charger. The dispenser available thru the service parts tool program is Milwaukee 6560-21 12-Volt Caulk and adhesive Gun with 10 oz Carriage kit.

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SERVICE PROCEDURE (CONT.)

NEW Windshield Replacement Kit 2592784C91

The conversion to the new windshield replacement kit was driven by the discontinuation of the 2-part urethane adhesive U-216. You will notice a few changes in the new kits.

1. The new adhesive is Betaseal Express. This is a 1-part moisture curing urethane adhesive.

   You will need a pneumatic or electric dispenser for 1-part cartridges.

   There are 2 tubes in the kit to give you the same volume of material as the old kit.

2. There is no black dynamic mix head in the kit.

   The 1-part adhesive requires no mixing, so there are only tips for the cartridges.

3. The primers have different numbers. These materials are equivalent to the old kit part numbers. The application process is the same. The numbering changes are:

   - Clear glass primer 43518 replaces U-401.
   - Black out glass primer 43520A replaces U-402.
   - Body primer 43532 replaces U-413.

   These primers are compatible with each other, as long as the priming system includes a “clear glass primer”, a “black out glass primer”, and a “body primer”. **In some initial critical need kits, you will receive various combinations of this primer system, always with the Betaseal Express 1-part adhesive.**

The new windshield replacement kit is ordered under International #2592784C91. This kit includes:

- 2 cartridges of Betaseal Express 1-part urethane adhesive
- 1 bottle 43518 clear glass primer
- 1 bottle 43520A black out glass primer
- 1 bottle 43532 body primer

Please Read the attached Dow Automotive Safety Data Sheets for These Products

NOTICE

The information supplied herein has been furnished by the manufacturer and/or the supplier for use with its product. International Truck and Engine Corporation reprints this information based on representations made by the Company. While users are urged to carefully follow the instructions accompanying the product, International cannot accept any responsibility for user errors, or mishaps resulting from such errors, or from any misuse of the product.

Material Safety Data Sheet
The Dow Chemical Company

Product Name: BETASEAL(TM) 43520A Glass Primer

Issue Date: 10/13/2005
Print Date: 22 Oct 2005

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
BETASEAL(TM) 43520A Glass Primer

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

2. Hazards Identification

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

WARNING! Harmful or fatal if swallowed; can enter lungs and cause damage. May be harmful if inhaled. May cause central nervous system effects. May cause allergic skin reaction. Causes eye irritation.

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 pain disproportionate to the level of irritation to eye tissues. May cause severe eye irritation. May cause severe corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness. Vapor may cause lacrimation (tears).
Skin Contact: Brief contact may cause slight skin irritation with local redness. May cause drying and flaking of the skin. May stain skin.
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: Vapor concentrations are attainable which could be hazardous on single exposure. Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. May cause nausea and vomiting. Alcohol consumed before or after exposure may increase adverse effects. 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.
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. Swallowing may cause gastrointestinal irritation, vomiting and diarrhea. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.
Effects of Repeated Exposure: Contains component(s) which have been reported to cause effects on the following organs in animals: Liver. Kidney. Respiratory tract. Spleen. Methyl ethyl ketone has caused liver effects in laboratory animals exposed by inhalation to high concentrations. Methyl ethyl ketone is probably not neurotoxic in itself but it potentiates the neurotoxicity of methyl-n-butyl ketone and n-hexane. The data presented are for the following material: Toluene. May cause central nervous system effects. Excessive exposure may cause neurologic signs and symptoms. 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.
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, toluene has been toxic to the fetus at doses toxic to the mother; it has caused birth defects in mice when administered orally, but not by inhalation.

3. Composition Information

Component	CAS #	Amount
Methyl ethyl ketone	78-93-3	> 40.0 - < 50.0 %
Toluene	108-88-3	> 5.0 - < 15.0 %
Carbon black	1333-86-4	> 5.0 - < 15.0 %
1,3-Diisocyanato-methylbenzene, 1,6-diisocyanatohexane polymer	63368-95-6	> 5.0 - < 15.0 %
n-Butyl acetate	123-86-4	< 10.0 %
POLYESTER	35176-78-4	< 10.0 %
SILANE ADDUCT C31188683		< 10.0 %
Xylene	1330-20-7	< 1.0 %
Dipotassium monoxide	12136-45-7	< 0.5 %

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: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

Notes to Physician: The decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. 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. Maintain adequate ventilation and oxygenation of the patient. 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: Skin contact may aggravate preexisting dermatitis. 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.
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: 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.
Unusual Fire and Explosion Hazards: Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur.
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: Carbon dioxide. Carbon monoxide.

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.
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.
Environmental Precautions: 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.

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
Methyl ethyl ketone	ACGIH	TWA	200 ppm BEI
	ACGIH	STEL	300 ppm BEI
	OSHA Z1	PEL	590 mg/m3 200 ppm
n-Butyl acetate	ACGIH	TWA	150 ppm
	ACGIH	STEL	200 ppm
	OSHA Z1	PEL	710 mg/m3 150 ppm

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.
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.

Personal Protection

Eye/Face Protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.
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. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Neoprene. Chlorinated polyethylene. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). 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 respiratory protection is required, use an approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. In confined or poorly ventilated areas, use an approved 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.
Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Use only with adequate ventilation.

9. Physical and Chemical Properties

Physical State	Liquid
Color	Black
Odor	Solvent
Flash Point - Closed Cup	-7.2 °C (19.0 °F) *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)	0.99 *ASTM D1475*
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	4.82 lb/gal *EPA METHOD NO. 24, PROCEDURE B* (typical value)

10. Stability and Reactivity

Stability/Instability
Stable.

Incompatible Materials: Strong oxidizers.

Hazardous Polymerization
Will not occur.

Thermal Decomposition
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.
Repeated Dose Toxicity
Contains component(s) which have been reported to cause effects on the following organs in animals: Liver. Kidney. Respiratory tract. Spleen. Methyl ethyl ketone has caused liver effects in laboratory animals exposed by inhalation to high concentrations. Methyl ethyl ketone is probably not neurotoxic in itself but it potentiates the neurotoxicity of methyl-n-butyl ketone and n-hexane. The data presented are for the following material: Toluene. May cause central nervous system effects. Excessive exposure may cause neurologic signs and symptoms. 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 component(s) which did not cause cancer in laboratory animals.

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, toluene has been toxic to the fetus at doses toxic to the mother; it has caused birth defects in mice when administered orally, but not by inhalation.

Reproductive Toxicity
Contains component(s) which did not interfere with reproduction in animal studies.

Genetic Toxicology
Contains a component(s) which was negative in In Vitro genetic toxicity studies. The majority of the many genetic toxicity studies done on toluene and methyl ethyl ketone, both in vitro and in animals, have been negative.

12. Ecological Information

CHEMICAL FATE

Data for Component: **Methyl ethyl ketone**

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): 2.44E-5 atm*m3/mole; 25 °C Measured
Partition coefficient, n-octanol/water (log Pow): 0.29 Measured
Partition coefficient, soil organic carbon/water (Koc): 3.8 Estimated

Persistence and Degradability
Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
1.33E-12 cm3/s	8 d	Estimated

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
71 - 76 %	71 - 82 %	71 - 89 %	

Theoretical Oxygen Demand: 2.44 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 cm3/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: **Carbon black**

Movement & Partitioning

Partitioning from water to n-octanol is not applicable.

Persistence and Degradability

Biodegradation is not applicable.

Data for Component: **n-Butyl acetate**

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): 3.2E-4 atm*m3/mole; 25 °C Measured
Partition coefficient, n-octanol/water (log Pow): 1.78 Measured
Partition coefficient, soil organic carbon/water (Koc): 34 - 233 Estimated

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
4.61E-12 cm3/s	2.32 d	Estimated

Stability in Water (1/2-life):
11 - 1,095 d
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
98 %	28 d	OECD 301D Test

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
38 - 58 %	42 - 68 %	42 - 83 %	

Chemical Oxygen Demand: 1.69 mg/mg
Theoretical Oxygen Demand: 2.20 mg/mg

Data for Component: **POLYESTER**

Movement & Partitioning

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

Persistence and Degradability

No appreciable biodegradation is expected.

Data for Component: **Xylene**

Movement & Partitioning

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is medium (Koc between 150 and 500).
Henry's Law Constant (H): 7.45E-3 atm*m3/mole; 25 °C Estimated
Partition coefficient, n-octanol/water (log Pow): 3.12 Measured
Partition coefficient, soil organic carbon/water (Koc): 443 Estimated
Bioconcentration Factor (BCF): 15 - 21; fish; Measured

Persistence and Degradability

Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).
Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
6.5E-12 cm3/s	19.7 h	Estimated

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
37 %	58 %	72 %	

Theoretical Oxygen Demand: 3.17 mg/mg

ECOTOXICITY

Data for Component: **Methyl ethyl ketone**

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, bluegill (Lepomis macrochirus): 1,690 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, immobilization: 5,091 mg/l
Aquatic Plant Toxicity
EC50, alga Scenedesmus sp., biomass growth inhibition: 4,300 mg/l
Toxicity to Micro-organisms
EC50; bacteria, Growth inhibition (cell density reduction): > 1,000 mg/l

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
; bacteria, Growth inhibition, 16 h: 29 mg/l
Fish Chronic Toxicity Value (ChV):

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
5.0 mg/l	sheepshead minnow (Cyprinodon variegatus)		survival	

Toxicity to Soil Dwelling Organisms
LC50, Earthworm Eisenia foetida, adult: 150 - 280 mg/kg

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: **n-Butyl acetate**

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, fathead minnow (Pimephales promelas): 18 mg/l
LC50, bluegill (Lepomis macrochirus): 100 mg/l
LC50, golden orfe (Leuciscus idus): 62 - 141 mg/l
LC50, tidewater silverside (Menidia beryllina): 185 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, water flea Daphnia magna: 44 mg/l
Toxicity to Micro-organisms
EC50; bacteria, Growth inhibition: > 1,000 mg/l

Data for Component: **POLYESTER**

Not expected to be acutely toxic to aquatic organisms.

Data for Component: **Xylene**

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, rainbow trout (Oncorhynchus mykiss): 9.2 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, water flea Daphnia magna, 48 h: 14.3 mg/l
Aquatic Plant Toxicity
EC50, green alga Selenastrum capricornutum, biomass growth inhibition, 72 h: 3.2 - 4.9 mg/l
Fish Chronic Toxicity Value (ChV):

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
> 1.3 mg/l	rainbow trout (Oncorhynchus mykiss)			56 d

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. DOW HAS 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.

14. Transport Information

DOT Non-Bulk
Proper Shipping Name: COATING SOLUTION
Hazard Class: 3 **ID Number:** UN1139 **Packing Group:** PG II

DOT Bulk
Proper Shipping Name: COATING SOLUTION
Hazard Class: 3 **ID Number:** UN1139 **Packing Group:** PG II

IMDG
Proper Shipping Name: COATING SOLUTION
Hazard Class: 3 **ID Number:** UN1139 **Packing Group:** PG II
EMS Number: F-E,S-E

ICAO/IATA
Proper Shipping Name: COATING SOLUTION
Hazard Class: 3 **ID Number:** UN1139 **Packing Group:** PG II
Cargo Packing Instruction: 307
Passenger Packing Instruction: 305

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	Yes
Fire Hazard	Yes
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	> 5.0 - < 15.0 %
Xylene	1330-20-7	< 1.0 %

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
Methyl ethyl ketone	78-93-3	> 40.0 - < 50.0 %
Toluene	108-88-3	> 5.0 - < 15.0 %
n-Butyl acetate	123-86-4	< 10.0 %
Xylene	1330-20-7	< 1.0 %
Carbon black	1333-86-4	> 5.0 - < 15.0 %
Dipotassium monoxide	12136-45-7	< 0.5 %

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)

Component	CAS #	Amount
Methyl ethyl ketone	78-93-3	> 40.0 - < 50.0 %
Toluene	108-88-3	> 5.0 - < 15.0 %
n-Butyl acetate	123-86-4	< 10.0 %
Xylene	1330-20-7	< 1.0 %
Carbon black	1333-86-4	> 5.0 - < 15.0 %
Dipotassium monoxide	12136-45-7	< 0.5 %

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103

This product contains the following substances which are subject to CERCLA Section 103 reporting requirements and which are listed in 40 CFR 302.4.

Component	CAS #	Amount
Toluene	108-88-3	> 5.0 - < 15.0 %

Methyl ethyl ketone	78-93-3	> 40.0 - < 50.0 %
n-Butyl acetate	123-86-4	< 10.0 %
Xylene	1330-20-7	< 1.0 %

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Component	CAS #	Amount
Toluene	108-88-3	> 5.0 - < 15.0 %

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.
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.
European Inventory of Existing Commercial Chemical Substances (EINECS)
CAUTION: One component of this product is not yet fully tested. For placing on to the European Union market notification requirements apply.

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	2	3	0

Recommended Uses and Restrictions
A primer -- For use in automotive applications.

Revision
Identification Number: 50924 / 1001 / Issue Date 10/13/2005 / Version: 4.0
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

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 its 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.

Material Safety Data Sheet
The Dow Chemical Company

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
BETASEAL(TM) 43532 Body Primer

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

2. Hazards Identification

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

DANGER! Causes eye irritation. May cause allergic skin reaction. May cause allergic respiratory reaction. May cause central nervous system effects. May cause anesthetic effects. Extremely flammable liquid and vapor - Vapor may cause flash fire.

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 moderate eye irritation which may be slow to heal. May cause moderate corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.
Skin Contact: Brief contact may cause slight skin irritation with local redness. May cause drying and flaking of the skin.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Skin Sensitization: Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization. Skin contact may cause an allergic skin reaction. Has caused allergic skin reactions when tested in mice.
Inhalation: Vapor concentrations are attainable which could be hazardous on single exposure. May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. May cause nausea and vomiting. Decreased lung function has been associated with overexposure to isocyanates. May cause pulmonary edema (fluid in the lungs.) 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.
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.
Effects of Repeated Exposure: Contains component(s) which have been reported to cause effects on the following organs in animals: Blood. Kidney. Liver. Development of cataracts has been reported in laboratory animals after prolonged repeated skin exposure to acetone. Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols. Methyl ethyl ketone is probably not neurotoxic in itself but it potentiates the neurotoxicity of methyl-n-butyl ketone and n-hexane.
Cancer Information: Lung tumors have been observed in laboratory animals exposed to 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.

3. Composition Information

Component	CAS #	Amount
Methyl ethyl ketone	78-93-3	35.0 - 45.0 %
Diphenylmethane-4,4'-diisocyanate, isomers(1) and homologues(2), blending of (1) and (2)	9016-87-9	15.0 - 25.0 %
Acetone	67-64-1	> 10.0 - < 20.0 %
Talc	14807-96-6	5.0 - 15.0 %
Carbon black	1333-86-4	< 5.0 %
4,4' - methylenediphenyl diisocyanate	101-68-8	< 5.0 %
Quartz	14808-60-7	< 1.0 %

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. 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: 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. Maintain adequate ventilation and oxygenation of the patient. If you are sensitized to diisocyanates, consult your physician regarding working with other respiratory irritants or sensitizers. 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). Skin contact may aggravate preexisting dermatitis.

5. Fire Fighting Measures

Extinguishing Media: Carbon dioxide fire extinguishers. Dry chemical fire extinguishers.
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: 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.
Unusual Fire and Explosion Hazards: Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur.
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: Carbon dioxide. Carbon monoxide.

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.
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.
Environmental Precautions: 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 contact with eyes, skin, and clothing. Avoid breathing vapor. Keep container closed. Keep away from heat, sparks and flame.

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	ACGIH	TWA	0.005 ppm
	OSHA Z1	Ceiling	0.2 mg/m3 0.02 ppm
Methyl ethyl ketone	ACGIH	TWA	200 ppm BEI
	ACGIH	STEL	300 ppm BEI
	OSHA Z1	PEL	590 mg/m3 200 ppm

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.

Personal Protection

Eye/Face Protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator. 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. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Chlorinated polyethylene. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Viton. Avoid gloves made of: Polyvinyl chloride ("PVC" or "vinyl"). 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	Liquid
Color	Black

Odor	Solvent
Flash Point - Closed Cup	-11 °C (12 °F) *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)	1.02 *ASTM D1475*
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	4.65 lb/gal *EPA METHOD NO. 24, PROCEDURE B* (typical value)

10. Stability and Reactivity

Stability/Instability
Stable.

Incompatible Materials: Strong oxidizers.

Hazardous Polymerization
Will not occur.

Thermal Decomposition
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
Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization. Skin contact may cause an allergic skin reaction. Has caused allergic skin reactions when tested in mice.
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: Blood. Kidney. Liver. Development of cataracts has been reported in laboratory animals after prolonged repeated skin exposure to acetone. Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols. Methyl ethyl ketone is probably not neurotoxic in itself but it potentiates the neurotoxicity of methyl-n-butyl ketone and n-hexane.
Chronic Toxicity and Carcinogenicity

Lung tumors have been observed in laboratory animals exposed to 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.

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.

Reproductive Toxicity

Contains component(s) which did not interfere with reproduction in animal studies.

Genetic Toxicology

For the component(s) tested: In vitro genetic toxicity studies were predominantly negative. For the component(s) tested: Animal 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.

12. Ecological Information

CHEMICAL FATE

Data for Component: **Methyl ethyl ketone**

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): 2.44E-5 atm*m3/mole; 25 °C Measured
Partition coefficient, n-octanol/water (log Pow): 0.29 Measured
Partition coefficient, soil organic carbon/water (Koc): 3.8 Estimated

Persistence and Degradability

Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
1.33E-12 cm3/s	8 d	Estimated

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
71 - 76 %	71 - 82 %	71 - 89 %	

Theoretical Oxygen Demand: 2.44 mg/mg

Data for Component: **Diphenylmethane-4,4'-diisocyanate, isomers(1) and homologues(2), blending of (1) and (2)**

Movement & Partitioning

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.

Persistence and Degradability

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.

Data for Component: **Acetone**

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): 1.38E-5 atm*m3/mole; 25 °C Estimated
Partition coefficient, n-octanol/water (log Pow): -0.24 Measured
Partition coefficient, soil organic carbon/water (Koc): 0.37 - 2.0 Estimated
Bioconcentration Factor (BCF): 0.69; 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
	52 d	Estimated

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
91 %	28 d	OECD 301B Test

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
69.1 %	72.7 %	73.6 %	

Theoretical Oxygen Demand: 2.20 mg/mg

Data for Component: **Talc**

Movement & Partitioning

Partitioning from water to n-octanol is not applicable.

Persistence and Degradability

Biodegradation is not applicable.

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: **4,4' - methylenediphenyl diisocyanate**

Movement & Partitioning

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.

Persistence and Degradability

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.

Data for Component: **Quartz**

Movement & Partitioning

Partitioning from water to n-octanol is not applicable.

Persistence and Degradability

Biodegradation is not applicable.

ECOTOXICITY

Data for Component: **Methyl ethyl ketone**

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, bluegill (Lepomis macrochirus): 1,690 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, immobilization: 5,091 mg/l
Aquatic Plant Toxicity
EC50, alga Scenedesmus sp., biomass growth inhibition: 4,300 mg/l
Toxicity to Micro-organisms
EC50; bacteria, Growth inhibition (cell density reduction): > 1,000 mg/l

Data for Component: **Diphenylmethane-4,4'-diisocyanate, isomers(1) and homologues(2), blending of (1) and (2)**

For this family of materials: 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

Data for Component: **Acetone**

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): 5,500 - 6,100 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, water flea Daphnia magna, immobilization: 6,084 mg/l

Aquatic Plant Toxicity

EC50, diatom Skeletonema costatum, biomass growth inhibition: 11,800 - 14,400 mg/l

Toxicity to Micro-organisms

IC50, OECD 209 Test; activated sludge, respiration inhibition, 3 h: > 1,000 mg/l

Toxicity to Non-mammalian Terrestrial Species

dietary LC50, Japanese quail (Coturnix coturnix japonica): > 20,000 ppm

Data for Component: **Talc**

Material is practically non-toxic to fish on an acute basis (LC50 > 100 mg/L).

Fish Acute & Prolonged Toxicity

LC50, zebra fish (Brachydanio rerio): > 100,000 mg/l

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: **4,4' - methylenediphenyl diisocyanate**

For this family of materials: 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

Data for Component: **Quartz**

Not expected to be acutely toxic to aquatic organisms.

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. DOW HAS 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: Recycler. Reclaimer. 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 .

14. Transport Information

DOT Non-Bulk
Proper Shipping Name: COATING SOLUTION
Hazard Class: 3 **ID Number:** UN1139 **Packing Group:** PG II

DOT Bulk
Proper Shipping Name: COATING SOLUTION
Hazard Class: 3 **ID Number:** UN1139 **Packing Group:** PG II

IMDG
Proper Shipping Name: COATING SOLUTION
Hazard Class: 3 **ID Number:** UN1139 **Packing Group:** PG II
EMS Number: F-E,S-

ICAO/IATA
Proper Shipping Name: COATING SOLUTION
Hazard Class: 3 **ID Number:** UN1139 **Packing Group:** PG II
Cargo Packing Instruction: 305

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	Yes
Fire Hazard	Yes
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
4,4' - methylenediphenyl diisocyanate	101-68-8	< 5.0 %
Diphenylmethane-4,4'-diisocyanate, isomers(1) and homologues(2), blending of (1) and (2)	9016-87-9	> 15.0 - < 25.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

Component	CAS #
Acetone	67-64-1
Methyl ethyl ketone	78-93-3
4,4' - methylenediphenyl diisocyanate	101-68-8
Carbon black	1333-86-4
Talc	14807-96-6
Silica, crystalline	14808-60-7

US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS #
Acetone	67-64-1
Methyl ethyl ketone	78-93-3
4,4' - methylenediphenyl diisocyanate	101-68-8
Carbon black	1333-86-4
Talc	14807-96-6
Silica, crystalline	14808-60-7

US. New Jersey Community Right-To-Know Survey, Table A: NJ Environmental Hazardous Substances [EHS] List (N.J. Admin. Code Title 7 Section 1G-2.1)

Component	CAS #
Acetone	67-64-1
Methyl ethyl ketone	78-93-3
4,4' - methylenediphenyl diisocyanate	101-68-8

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103

This product contains the following substances which are subject to CERCLA Section 103 reporting requirements and which are listed in 40 CFR 302.4.

Component	CAS #	Amount
Methyl ethyl ketone	78-93-3	> 35.0 - < 45.0 %
Acetone	67-64-1	> 10.0 - < 20.0 %
4,4' - methylenediphenyl diisocyanate	101-68-8	< 5.0 %

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.

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.

16. Other Information

Product Literature

Additional information on this product may be obtained by calling your Dow Chemical Company sales or customer service contact.

Hazard Rating System

NFPA	Health	Fire	Reactivity
	2	3	0

Recommended Uses and Restrictions

A primer -- For use in automotive applications.

Revision

Identification Number: 50928 / 1001 / Issue Date 09/08/2005 / Version: 5.0

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

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 its 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.

Material Safety Data Sheet
The Dow Chemical Company

Product Name: BETASEAL(TM) EXPRESS

Issue Date: 08/01/2006
Print Date: 05 Aug 2006

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
BETASEAL(TM) EXPRESS

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: Odorless
Hazards of product:

WARNING! May cause allergic skin and respiratory reaction. May cause eye irritation.

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 slight skin irritation with local redness. Material may stick to skin causing irritation upon removal. May stain skin.
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. For the minor component(s): MDI. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause pulmonary edema (fluid in the lungs.) Decreased lung function has been associated with overexposure to isocyanates. May cause nausea and vomiting. 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.
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. Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.
Cancer Information: Lung tumors have been observed in laboratory animals exposed to 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.
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 P96-1231		> 35.0 - < 45.0 %
MDI based urethane polymer P05-578		> 35.0 - < 45.0 %
Carbon black	1333-86-4	> 20.0 - < 30.0 %
Dinonyl phthalate, branched and linear	68515-45-7	> 15.0 - < 25.0 %
Diheptyl phthalate, branched and linear	68515-44-6	> 15.0 - < 25.0 %
Di(heptyl-nonyl) phthalate, branched and linear	111381-89-6	> 15.0 - < 25.0 %
Di(nonyl-undecyl) phthalate, branched and linear	111381-91-0	> 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 %
Ceramic materials and wares, chemicals	66402-68-4	< 10.0 %
Diisononyl phthalate	68515-48-0	> 15.0 - < 25.0 %
Styrene-acrylonitrile polymer	57913-80-1	< 10.0 %
4,4' -Methylenediphenyl diisocyanate	101-68-8	< 1.0 %
1-Methylazacyclopentan-2-one	872-50-4	< 1.0 %

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: 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. Maintain adequate ventilation and oxygenation of the patient. If you are sensitized to diisocyanates, consult your physician regarding working with other respiratory irritants or sensitizers. 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. Foam. Water fog or fine spray.
Extinguishing Media to Avoid: Do not use direct water stream.
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. 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.

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.
Ignition Sources Removal: Not applicable.
Dust Control: Not applicable.
Personal Precautions: Isolate area. 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.

7. Handling and Storage

Handling
General Handling: Use with adequate ventilation. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Do not breathe vapor. Keep container closed.

Storage

Store in tightly closed, properly vented containers. Store in a dry place. Store indoors. Store away from direct sunlight.

Storage temperature: 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
1-Methylazacyclopentan-2-one	WEEL	TWA	40 mg/m3 10 ppm SKIN

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.

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 when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Viton. Butyl rubber. Polyethylene. Chlorinated polyethylene. Polyethylene/ethyl vinyl alcohol laminate ("PE/EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). 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	Odorless
Flash Point - Closed Cup	110 °C (230 °F) *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)	1.2 *ASTM D1475*
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	0.15 lb/gal *EPA METHOD NO. 24, PROCEDURE B* (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. Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

Chronic Toxicity and Carcinogenicity

Lung tumors have been observed in laboratory animals exposed to 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.

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.

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.

12. Ecological Information

CHEMICAL FATE

Movement & Partitioning

For the phthalate ester(s): Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). For the fillers: Partitioning from water to n-octanol is not applicable.

Persistence and Degradability

For the phthalate ester(s): Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions. For the fillers: Biodegradation is not applicable.

ECOTOXICITY

Based largely or completely on component information. For the phthalate ester(s): 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). Based largely or completely on information for: Clay. Not expected to be acutely toxic to aquatic organisms.

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. DOW HAS 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

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

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	Yes
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
4,4' -Methylenediphenyl diisocyanate	101-68-8	< 1.0 %
1-Methylazacyclopentan-2-one	872-50-4	< 1.0 %

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
4,4' -Methylenediphenyl diisocyanate	101-68-8	< 1.0 %
Carbon black	1333-86-4	> 25.0 - < 35.0 %

1-Methylazacyclopentan-2-one	872-50-4	< 1.0 %
Porcelain clay	1332-58-7	< 10.0 %
Diisononyl phthalate	68515-48-0	> 15.0 - < 25.0 %
Diisononyl phthalate	28553-12-0	> 15.0 - < 25.0 %
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(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 %
Di(nonyl-undecyl) phthalate, branched and linear	111381-91-0	> 15.0 - < 25.0 %
Diundecyl phthalate, branched and linear	85507-79-5	> 15.0 - < 25.0 %

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)

Component	CAS #	Amount
4,4' -Methylenediphenyl diisocyanate	101-68-8	< 1.0 %
Carbon black	1333-86-4	> 20.0 - < 30.0 %
Diisononyl phthalate	28553-12-0	> 15.0 - < 25.0 %
Diisononyl phthalate	68515-48-0	> 15.0 - < 25.0 %
Dinonyl phthalate, branched and linear	68515-45-7	> 15.0 - < 25.0 %
Diheptyl phthalate, branched and linear	68515-44-6	> 15.0 - < 25.0 %
Di(nonyl-undecyl) phthalate, branched and linear	111381-91-0	> 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 %

US. New Jersey Community Right-To-Know Survey, Table A: NJ Environmental Hazardous Substances [EHS] List (N.J. Admin. Code Title 7 Section 1G-2.1)

Component	CAS #	Amount
4,4' -Methylenediphenyl diisocyanate	101-68-8	< 1.0 %
1-Methylazacyclopentan-2-one	872-50-4	< 1.0 %

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103
This product contains the following substances which are subject to CERCLA Section 103 reporting requirements and which are listed in 40 CFR 302.4.

Component	CAS #	Amount
4,4' -Methylenediphenyl diisocyanate	101-68-8	< 1.0 %

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Component	CAS #	Amount
1-Methylazacyclopentan-2-one	872-50-4	< 1.0 %

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.
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.

European Inventory of Existing Commercial Chemical Substances (EINECS)
The components of this product are on the EINECS inventory or are exempt from inventory requirements.
Korea Existing Chemicals Inventory (KECI)
One or more of the components of this product are not included in the Korea Existing Chemicals Inventory (KECI).
China. Inventory of Existing Chemical Substances
This product is not listed on the State Environmental Protection Agency (SEPA) China Chemical Inventory. Therefore, this product should be treated as a new chemical substance and formal registration is required before importation of this product to China.
Australia. Industrial Chemical (Notification and Assessment) Act
One or more of the components of this product are not included in The Australian Inventory of Chemical Substances (AICS).
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.

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	1	1	0

Recommended Uses and Restrictions

A urethane adhesive -- For use in automotive applications.

Revision

Identification Number: 51014 / 0000 / Issue Date 08/01/2006 / Version: 5.2
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

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.