



# Material Safety Data Sheet

The Dow Chemical Company

**Product Name:** THERMAX(TM) 1.50 Inch Cavity Cut Insulation Sheathing

**Issue Date:** 01/10/2011

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The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## 1. Product and Company Identification

### Product Name

THERMAX™ 1.50 Inch Cavity Cut Insulation Sheathing

### COMPANY IDENTIFICATION

The Dow Chemical Company  
2030 Willard H. Dow Center  
Midland, MI 48674  
United States

Customer Information Number:

800-258-2436

[SDSQuestion@dow.com](mailto:SDSQuestion@dow.com)

### EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:**

989-636-4400

**Local Emergency Contact:**

989-636-4400

## 2. Hazards Identification

### Emergency Overview

**Color:** Tan

**Physical State:** Board

**Odor:** Mild

**Hazards of product:**

Toxic fumes may be released in fire situations.

### OSHA Hazard Communication Standard

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

### Potential Health Effects

**Eye Contact:** Solid or dust may cause irritation or corneal injury due to mechanical action. Fumes or dust generated from cutting or grinding operations may cause eye irritation.

**Skin Contact:** May cause itching. May cause skin irritation due to mechanical abrasion.

**Skin Absorption:** Skin absorption is unlikely due to physical properties.

®(TM)\*Trademark

**Inhalation:** Dusts or fibers generated in processing may cause irritation of the upper respiratory tract (nose and throat). Fumes or dusts generated from cutting or grinding operations may cause irritation of the upper respiratory tract and lungs. Concentrations of the blowing agents anticipated incidental to proper handling are expected to be well below those which cause acute inhalation effects and below exposure guidelines.

**Ingestion:** Swallowing is unlikely because of the physical state. Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. May cause choking if swallowed.

**Effects of Repeated Exposure:** Repeated exposures to dusts of this material are not anticipated to result in systemic toxicity or permanent lung injury; however, excessive exposures may cause less severe respiratory effects. The data presented are for the following material: The fiberglass in this product is continuous filament fiberglass. Repeated exposure to particles generated by grinding may result in implantation of particles in the skin. For the minor component(s): 1-Bromopropane. May cause central nervous system effects. In animals, effects have been reported on the following organs: Male reproductive organs. Female reproductive organs. Liver. Testing has indicated that normal handling and cutting are unlikely to result in exposure levels of 1-bromopropane sufficient to cause the listed effects.

**Birth Defects/Developmental Effects:** For the minor component(s): 1-Bromopropane. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Testing has indicated that normal handling and cutting are unlikely to result in exposure levels of 1-bromopropane sufficient to cause the listed effects.

**Reproductive Effects:** Contains 1-bromopropane which has been shown to interfere with reproduction and fertility in animal studies. Testing has indicated that normal handling and cutting are unlikely to result in exposure levels of 1-bromopropane sufficient to cause the listed effects.

### 3. Composition Information

Component	CAS #	Amount
Modified Polyisocyanurate Rigid Cellular Polymer	Not applicable	> 55.0 %
Aluminum	7429-90-5	> 25.0 - < 35.0 %
Tris(1-chloro-2-propyl) phosphate	13674-84-5	< 10.0 %
Cyclopentane (8Cl, 9Cl)	287-92-3	< 10.0 %
Isopentane	78-78-4	< 5.0 %
Continuous Filament Glass Fiber	Not applicable	< 5.0 %
1-Bromopropane	106-94-5	< 5.0 %
2,2-Dimethylbutane	75-83-2	< 5.0 %

### 4. First-aid measures

#### Description of first aid measures

**Inhalation:** Move person to fresh air; if effects occur, consult a physician.

**Skin Contact:** Wash skin with plenty of water.

**Eye Contact:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

**Ingestion:** If swallowed, seek medical attention. May cause gastrointestinal blockage. Do not give laxatives. Do not induce vomiting unless directed to do so by medical personnel.

#### Most important symptoms and effects, both acute and delayed

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

#### Indication of immediate medical attention and special treatment needed

If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote.

Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

## 5. Fire Fighting Measures

### **Suitable extinguishing media**

Water. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers.

### **Special hazards arising from the substance or mixture**

**Hazardous Combustion Products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. In smoldering or flaming conditions, carbon monoxide, carbon dioxide and carbon are generated. Combustion products may include and are not limited to: Nitrogen oxides. Combustion products may include trace amounts of: Hydrogen cyanide. Hydrogen halides.

**Unusual Fire and Explosion Hazards:** Container may vent and/or rupture due to fire. When product is stored in closed containers, a flammable atmosphere can develop. Mechanical cutting, grinding or sawing can cause formation of dusts. To reduce the potential for dust explosion, do not permit dust to accumulate. This product contains a flame retardant to inhibit accidental ignition from small fire sources. This plastic foam product is combustible and should be protected from flames and other high heat sources. For more information, contact Dow. Dense smoke is emitted when burned without sufficient oxygen.

### **Advice for firefighters**

**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.

**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). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

## 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** There are no special required instructions.

**Environmental precautions:** There are no special required instructions.

**Methods and materials for containment and cleaning up:** Recover spilled material if possible. See Section 13, Disposal Considerations, for additional information.

## 7. Handling and Storage

### **Handling**

**General Handling:** This material is combustible and should not be exposed to flame or other ignition sources. No smoking, open flames or sources of ignition in handling and storage area. Fabrication methods which involve cutting into this product may release the blowing agent(s) remaining in the cells. Provide adequate ventilation to assure localized concentrations in release areas are maintained below the lower flammable limit. Refer to Exposure Controls and Personal Protection, Section 8 of the MSDS.

**Other Precautions:** Good housekeeping and controlling of dusts are necessary for safe handling of product.

### **Storage**

Minimize sources of ignition, such as static build-up, heat, spark or flame. Flammable vapors may accumulate in some storage situations. During shipment, storage, installation and use, this material should not be exposed to flame or other ignition sources.

## 8. Exposure Controls / Personal Protection

### Exposure Limits

Component	List	Type	Value
Isopentane	ACGIH	TWA	600 ppm
1-Bromopropane	Dow IHG	TWA	5 ppm
	Dow IHG	STEL	10 ppm
	ACGIH (USA)	TWA	10 ppm
	ACGIH	TWA	10 ppm
Cyclopentane (8Cl, 9Cl)	ACGIH	TWA	600 ppm
Aluminum	OSHA Table Z-1	PEL Total dust. as Al	15 mg/m3
	OSHA Table Z-1	PEL Respirable dust. as Al	5 mg/m3
	ACGIH	TWA	1 mg/m3
		Respirable fraction.	
Continuous Filament Glass Fiber	ACGIH	TWA Inhalable fraction.	5 mg/m3
	ACGIH	TWA Fiber.	1 fibers/cm3

Concentrations of the blowing agents anticipated incidental to proper handling are expected to be well below those which cause acute inhalation effects and below exposure guidelines.

### Personal Protection

**Eye/Face Protection:** Eye protection should not be necessary. For fabrication operations safety glasses (with side shields) are recommended. If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles. If exposure to fumes causes eye discomfort, use a full-face air-purifying 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.

**Hand protection:** Use gloves to protect from mechanical injury. Selection of gloves will depend on the task.

**Respiratory Protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. If respiratory irritation is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Particulate filter.

**Ingestion:** No precautions necessary due to the physical properties of the material.

### Engineering Controls

**Ventilation:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

## 9. Physical and Chemical Properties

### Appearance

Physical State	Board
Color	Tan
Odor	Mild
pH	Not applicable
Melting Point	Not applicable

<b>Freezing Point</b>	Not applicable
<b>Boiling Point (760 mmHg)</b>	Not applicable.
<b>Flash Point - Closed Cup</b>	Not applicable
<b>Flammable Limits In Air</b>	<b>Lower:</b> Not applicable <b>Upper:</b> Not applicable
<b>Vapor Pressure</b>	Not applicable
<b>Vapor Density (air = 1)</b>	Not applicable
<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	0.02 - 0.05 <i>Literature</i>
<b>Solubility in water (by weight)</b>	<i>Literature</i> insoluble in water
<b>Autoignition Temperature</b>	490 °C (914 °F) <i>ASTM D1929</i>
<b>Decomposition Temperature</b>	No test data available
<b>Kinematic Viscosity</b>	Not applicable

## 10. Stability and Reactivity

### Reactivity

No dangerous reaction known under conditions of normal use.

### Chemical stability

Thermally stable at typical use temperatures.

### Possibility of hazardous reactions

Polymerization will not occur.

**Conditions to Avoid:** Avoid temperatures above 150°C (302°F) Exposure to elevated temperatures can cause product to decompose. Avoid direct sunlight.

**Incompatible Materials:** Avoid contact with: Strong oxidizers.

### Hazardous decomposition products

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

## 11. Toxicological Information

### Acute Toxicity

#### Ingestion

As product: Single dose oral LD50 has not been determined.

For the minor component(s): LD50, Rat > 1,000 - < 4,500 mg/kg

#### Dermal

As product: The dermal LD50 has not been determined.

For the minor component(s): LD50, Rabbit > 5,000 mg/kg

#### Inhalation

As product: The LC50 has not been determined.

For the minor component(s): LC50, 4 h, Aerosol, Rat > 4.6 mg/l

### Eye damage/eye irritation

Solid or dust may cause irritation or corneal injury due to mechanical action. Fumes or dust generated from cutting or grinding operations may cause eye irritation.

### Skin corrosion/irritation

May cause itching. May cause skin irritation due to mechanical abrasion.

### Repeated Dose Toxicity

Repeated exposures to dusts of this material are not anticipated to result in systemic toxicity or permanent lung injury; however, excessive exposures may cause less severe respiratory effects. The data presented are for the following material: The fiberglass in this product is continuous filament fiberglass. Repeated exposure to particles generated by grinding may result in implantation of particles in the skin. For the minor component(s): 1-Bromopropane. May cause central nervous system effects. In animals, effects have been reported on the following organs: Male reproductive

organs. Female reproductive organs. Liver. Testing has indicated that normal handling and cutting are unlikely to result in exposure levels of 1-bromopropane sufficient to cause the listed effects. Additives are encapsulated in the product and are not expected to be released under normal processing conditions or foreseeable emergency.

#### **Chronic Toxicity and Carcinogenicity**

The fiberglass in this product is continuous filament fiberglass. IARC's evaluation of data on continuous filament fiberglass is that there is inadequate evidence of carcinogenicity in animals and in humans. IARC's classification was based primarily on animal studies involving routes of administration (intratracheal, intrapleural, and intraperitoneal) which have limited relevance to typical exposures anticipated in industrial settings.

#### **Developmental Toxicity**

For the minor component(s): 1-Bromopropane. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Testing has indicated that normal handling and cutting are unlikely to result in exposure levels of 1-bromopropane sufficient to cause the listed effects.

#### **Reproductive Toxicity**

Contains 1-bromopropane which has been shown to interfere with reproduction and fertility in animal studies. Testing has indicated that normal handling and cutting are unlikely to result in exposure levels of 1-bromopropane sufficient to cause the listed effects.

#### **Genetic Toxicology**

The data presented are for the following material: The fiberglass in this product is continuous filament fiberglass. In vitro genetic toxicity studies were inconclusive. For the minor component(s) 1-Bromopropane. In vitro genetic toxicity studies were predominantly negative.

## **12. Ecological Information**

### **Toxicity**

#### Data for Component: Aluminum

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

#### **Fish Acute & Prolonged Toxicity**

NOEC sublethal, fish, static renewal, 96 h: > 100 mg/l  
LC50, fish, static renewal, 96 h: > 100 mg/l

#### **Aquatic Invertebrate Acute Toxicity**

NOEC, water flea Daphnia magna, static, 48 h, immobilization: > 100 mg/l  
EC50, water flea Daphnia magna, static, 48 h, immobilization: > 100 mg/l

#### **Aquatic Plant Toxicity**

NOEC, green alga Pseudokirchneriella subcapitata (formerly known as Selenastrum capricornutum), static, Growth inhibition (cell density reduction), 72 h: > 100 mg/l  
ErC50, green alga Pseudokirchneriella subcapitata (formerly known as Selenastrum capricornutum), static, Growth rate inhibition, 72 h: > 100 mg/l

#### Data for Component: Tris(1-chloro-2-propyl) phosphate

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, bluegill (Lepomis macrochirus), static, 96 h: 84 mg/l

#### **Aquatic Invertebrate Acute Toxicity**

EC50, water flea Daphnia magna, static, 48 h, immobilization: 63 mg/l

#### **Aquatic Plant Toxicity**

EbC50, green alga Pseudokirchneriella subcapitata (formerly known as Selenastrum capricornutum), static, biomass growth inhibition, 96 h: 47 mg/l

#### **Toxicity to Micro-organisms**

EC50, OECD 209 Test; activated sludge, 3 h: 784 mg/l

#### Data for Component: Cyclopentane (8Cl, 9Cl)

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).

**Aquatic Invertebrate Acute Toxicity**

|| LC50, water flea Daphnia magna, 48 h, lethality: 10.5 mg/l

Data for Component: Isopentane

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

**Aquatic Invertebrate Acute Toxicity**

|| EC50, water flea Daphnia magna, 48 h, immobilization: 2.3 mg/l

**Persistence and Degradability**

Data for Component: Tris(1-chloro-2-propyl) phosphate

|| Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

**OECD Biodegradation Tests:**

Biodegradation	Exposure Time	Method	10 Day Window
14 %	28 d	OECD 301E Test	fail

**Indirect Photodegradation with OH Radicals**

Rate Constant	Atmospheric Half-life	Method
4.47E-11 cm <sup>3</sup> /s	0.24 d	Estimated.

|| **Theoretical Oxygen Demand:** 1.17 mg/mg

Data for Component: Cyclopentane (8Cl, 9Cl)

|| Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

**Indirect Photodegradation with OH Radicals**

Rate Constant	Atmospheric Half-life	Method
4.52E-12 cm <sup>3</sup> /s	2.4 d	Estimated.

|| **Theoretical Oxygen Demand:** 3.42 mg/mg

Data for Component: Isopentane

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

**OECD Biodegradation Tests:**

Biodegradation	Exposure Time	Method	10 Day Window
71.43 %	28 d	OECD 301F Test	pass

**Indirect Photodegradation with OH Radicals**

Rate Constant	Atmospheric Half-life	Method
4.03E-12 cm <sup>3</sup> /s	2.65 d	Estimated.

|| **Theoretical Oxygen Demand:** 3.55 mg/mg

**Bioaccumulative potential**

Data for Component: Tris(1-chloro-2-propyl) phosphate

|| **Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

|| **Partition coefficient, n-octanol/water (log Pow):** 2.59 Measured

|| **Bioconcentration Factor (BCF):** 0.8 - 4.6; common carp (Cyprinus carpio); Measured

Data for Component: Cyclopentane (8Cl, 9Cl)

|| **Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

|| **Partition coefficient, n-octanol/water (log Pow):** 3.00 Measured

|| **Bioconcentration Factor (BCF):** 40; Estimated.

Data for Component: Isopentane

|| **Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

|| **Partition coefficient, n-octanol/water (log Pow):** 3.4 Estimated.

|| **Bioconcentration Factor (BCF):** 25; Estimated.

**Mobility in soil**

Data for Component: Tris(1-chloro-2-propyl) phosphate

|| **Mobility in soil:** Potential for mobility in soil is slight (Koc between 2000 and 5000).

**Partition coefficient, soil organic carbon/water (Koc):** 1,300 Estimated.  
**Henry's Law Constant (H):** < 1.35E-05 atm\*m3/mole; 25 °C Estimated.

Data for Component: **Cyclopentane (8CI, 9CI)**

**Mobility in soil:** Potential for mobility in soil is high (Koc between 50 and 150).  
**Partition coefficient, soil organic carbon/water (Koc):** 89 - 1,020 Estimated.  
**Henry's Law Constant (H):** 1.88E-01 atm\*m3/mole; 25 °C Measured  
**Distribution in Environment: Mackay Level 1 Fugacity Model:**

Air	Water.	Biota	Soil	Sediment
99.95 %	0.026 %	< 0.01 %	0.023 %	< 0.01 %

Data for Component: **Isopentane**

**Mobility in soil:** Potential for mobility in soil is high (Koc between 50 and 150).  
**Partition coefficient, soil organic carbon/water (Koc):** 68 Estimated.  
**Henry's Law Constant (H):** 1.4E+00 atm\*m3/mole; 25 °C Measured  
**Distribution in Environment: Mackay Level 1 Fugacity Model:**

Air	Water.	Biota	Soil	Sediment
100 %	0 %	0 %	0 %	0 %

### 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: Landfill. Incinerator or other thermal destruction device.

### 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 not 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**

<b>Immediate (Acute) Health Hazard</b>	No
<b>Delayed (Chronic) Health Hazard</b>	No
<b>Fire Hazard</b>	No
<b>Reactive Hazard</b>	No
<b>Sudden Release of Pressure Hazard</b>	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.

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
Aluminum	7429-90-5	< 35.0 %

**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.

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
Aluminum	7429-90-5	< 35.0 %
1-Bromopropane	106-94-5	< 5.0 %
Cyclopentane (8Cl, 9Cl)	287-92-3	< 10.0 %
Isopentane	78-78-4	< 5.0 %
2,2-Dimethylbutane	75-83-2	< 5.0 %

**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.

**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.

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
1-Bromopropane	106-94-5	< 5.0 %

**US. Toxic Substances Control Act**

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

**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 sales or customer service contact. Ask for a product handling guide.

**Hazard Rating System**

<b>NFPA</b>	<b>Health</b>	<b>Fire</b>	<b>Reactivity</b>
	1	1	0

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### Recommended Uses and Restrictions

Thermal insulation. For industrial use. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

### Revision

Identification Number: 82173 / 1001 / Issue Date 01/10/2011 / Version: 11.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

### Legend

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

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