Dow

Material Safety Data Sheet

The Dow Chemical Company

Product Name: THERMAX™ 0.50 Inch Insulation Sheathing

Issue Date: 01/10/2011 Print Date: 07 Jan 2013

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 0.50 Inch 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

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: Local Emergency Contact:

989-636-4400 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 (8CI, 9CI)	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	Туре	Value
Isopentane	ACGIH	TWA	600 ppm
1-Bromopropane	Dow IHG Dow IHG ACGIH (USA) ACGIH	TWA STEL TWA TWA	5 ppm 10 ppm 10 ppm 10 ppm
Cyclopentane (8Cl, 9Cl)	ACGIH	TWA	600 ppm
Aluminum	OSHA Table Z-1 OSHA Table Z-1	PEL Total dust. as Al PEL Respirable dust. as Al	15 mg/m3 5 mg/m3
Admir grand yr maendd an Latherdau y drafol yr cheffin o'i	ACGIH	TWA Respirable fraction.	1 mg/m3
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.

Physical and Chemical Properties

Appearance

Physical State

Color Odor

рН

Melting Point Freezing Point

Boiling Point (760 mmHg) Flash Point - Closed Cup

Flammable Limits In Air

Vapor Pressure

Vapor Density (air = 1) Specific Gravity (H2O = 1) Solubility in water (by

weight)

Autoignition Temperature

Decomposition Temperature

Kinematic Viscosity

Board

Tan Mild

Not applicable Not applicable

Not applicable Not applicable. Not applicable

Lower: Not applicable Upper: Not applicable

Not applicable Not applicable 0.02 - 0.05 *Literature*

Literature insoluble in water

490 °C (914 °F) ASTM D1929

No test data available

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

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

Aguatic 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

Aguatic 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 (8CI, 9CI)

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 Photodegrada	ation with OH Radicals	S	
Rate Constant	Atmosphe	eric Half-life	Method
4.47E-11 cm3/s	0.2	0.24 d	
Theoretical Oxygen D			

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

4.52E-12 cm3/s

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

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:

4.03E-12 cm3/s

Biodegradation	Exposure Time	Method	10 Day Window
71.43 %	28 d	OECD 301F Test	pass
	ation with OH Radicals		
Rate Constant	Atmosphe	ric Half-life	Method

2.4 d

Theoretical Oxygen Demand: 3.55 mg/mg

Bioaccumulative potential

Estimated.

Estimated.

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 (8CI, 9CI)

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 %</td>
 0.023 %
 < 0.01 %</td>

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-BulkNOT REGULATED

DOT BulkNOT 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

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

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

Component	CAS#	Amount	
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.

Component	CAS#	Amount
Aluminum	7429-90-5	< 35.0 %
1-Bromopropane	106-94-5	< 5.0 %
Cyclopentane (8CI, 9CI)	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.

Component	CAS#	Amount	
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

NFPA Health

Fire

Reactivity

Issue Date: 01/10/2011

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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.