

# M-SHIELD

WHMIS	PROTECTIVE CLOTHING	TRANSPORT OF DANGEROUS GOODS
		Not regulated

**SECTION I. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**Product name:** M-Shield  
**Use:** Intended to be covered by hot asphalt or coal tar BUR, modified bitumen, and single ply membrane system roof coverings.

**Code of MSDS:** CA U DRU SS FS 104  
**Formula number :** Not available  
**Revision date:** March 30, 2007  
**Revised by:** Marie-Claude Fontaine, Health and safety Supervisor  
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**SOPREMA (8:00am to 5:00pm – Eastern time):** (800) 567-1492  
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**CHEMTREC (USA) (24h.):** (800) 424-9300  
**Poison Control Centre:** Consult local telephone directory

**EMERGENCY OVERVIEW!!!**

Polyisocyanurate foam panel. No unusual conditions are expected from this product. Freshly expanded or heated foam may off-gas some pentane-blowing agent, which is heavier than air and may accumulate to ignitable concentrations if stored inside a sealed container or within confined areas. Ignitable atmospheres have concentrations that exceed inhalation exposure limits for workers, further reinforcing the need for ventilation when foam is freshly expanded.

With the exception of the blowing agent, this product does not present an inhalation, ingestion, or contact health hazard unless subjected to operations such as sawing, sanding, or machining that result in the generation of airborne particulates (dusts). Exposure to high dust levels may irritate the skin, eyes, nose, throat, or upper respiratory tract. Inhalation of high amounts of dust over long periods may overload lung clearance mechanisms and make lungs more vulnerable to respiratory disease.

**SECTION II. COMPOSITION AND INFORMATION ON DANGEROUS INGREDIENTS**

NAME	CAS #	% WEIGHT *	EXPOSURE LIMIT (ACGIH)	
			TLV-TWA	TLV-STEL
<b>Polyisocyanurate Foam</b> containing: <b>N-Pentane</b>	None	78	10 mg/m <sup>3</sup> (breathable dust)	Not established
	109-66-0	< 4.7	1410 mg/m <sup>3</sup>	Not established
<b>Felt facer (composite of wood pulp and glass fibers)</b> containing: <b>Fibreglass</b>	None	22		
	65997-17-3	5	1 f/cc for fibres longer than 5 µm with a diameter less than 3 µm	Not established
	1333-86-4	1	3.5 mg/m <sup>3</sup> (breathable dust)	Not established
<b>Formaldehyde</b>	50-00-0	Trace	0.3 ppm	2 ppm (OSHA)

\* Weight % based on 1-inch foam thickness.

**SECTION III. POTENTIAL HEALTH EFFECTS**

**Primary Means of Exposure:** Inhalation of particulates.  
**Secondary Means of Exposure:** Eye and skin contact with particulates and inhalation of vapors.

*Effects of Short-Term (Acute) Exposure*

**INHALATION:**  
Breathing dust from this product may cause a scratchy throat, congestion, and slight coughing.

**Polyiso Foam (generated dust and residual vapor) and Organics in Facers (generated dusts):**  
Dust may cause transient mechanical irritation of the upper respiratory tract. Workplace exposures to residual pentane vapors from this product are expected to be below levels of any health risk. Overexposure to high concentrations of pentane can cause narcotic effects. Signs and symptoms of overexposure to pentane include headache, nausea, dizziness, difficulty walking, or sleepiness. Studies have shown that short-time (10-minute) exposures to pentane concentrations as high as 5,000 ppm (11,750 mg/m<sup>3</sup>) produced no symptoms. Workplace exposure limits for pentane and other organic components are provided in table below. (2)

**Continuous Filament Glass Fibers in Facers (generated dust):**  
Airborne fragments of glass fibers may cause mechanical irritation of the upper respiratory tract, particularly mouth, nose and throat; glass dust may cause transient irritation of the upper respiratory tract. Workplace exposure limits are provided in table below. (2)

**Carbon Black:**  
Carbon black does not appear to cause significant harmful effects after a single short-term exposure, except general effects that would be expected with any fine dust (high concentrations can cause coughing and mild, temporary irritation). (1)

**SKIN CONTACT:**  
Direct contact with rough-cut foam or felt facers can cause mechanical abrasion cuts or puncture to fingers, hands or exposed skin.

**Polyisocyanurate Foam, Fibreglass:**  
Transient mechanical irritation. (2)

**Carbon Black:**  
Carbon black is not irritating to the skin. (1)

**EYE CONTACT:**  
Mechanical irritation, redness, tearing, and blurred vision can occur if dusts generated from these products come into contact with eyes. (2)

**Polyisocyanurate Foam, Fibreglass:**  
Mechanical irritation. (2)

**Carbon Black:**  
Carbon black dust is not irritating to the eyes except as a "foreign object". (1)

**INGESTION:**  
It is unlikely that toxic amounts of this product would be ingested with normal handling and use.

*Effects of Long-Term (Chronic) Exposure*

**EYE CONTACT:**  
None known.

**SKIN CONTACT:**  
None known.

**Carbon Black:**  
Fine particles can become embedded in the skin and trapped in hair follicles causing discolouration (carbon black "tattoos") and follicular blackheads. (1)

### SECTION III. POTENTIAL HEALTH EFFECTS

#### INHALATION:

Irritation of the upper respiratory tract, eyes, and/or skin.

#### *Polyiso Foam (generated dust and residual vapor) and Organics in Facers (generated dusts):*

There is no evidence that dusts generated from these products cause disease in humans. Facer dusts containing carbon black pigment are not analogous to the raw carbon black powders for which human carcinogenicity is suspected. No chronic effects are known for exposure to pentane vapor. (2)

#### *Continuous Filament Glass Fibers in Facers (generated dust):*

No chronic health effects are known to be associated with exposure to glass fibers. Results from epidemiological studies have not shown any increase in respiratory disease or cancer. The International Agency for Research on Cancer has classified continuous filament fibreglass "Not Classifiable as to Carcinogenicity to Humans" (Group 3). (2)

#### *Carbon Black:*

Carbon black dust is extremely fine and light and can be breathed deeply into the lungs, where it can accumulate. Normally the dust is cleared gradually from the lungs and has no harmful effects. However, high concentrations of dust can overwhelm the clearance capacity of the lungs, obstruct the lungs, and interfere with lung function. Symptoms may include coughing, increased phlegm production, and shortness of breath. It is unlikely that toxic amounts of this product would be ingested with normal handling and use. (1)

#### CARCINOGENICITY:

WARNING! This Product Contains a Chemical Known To The State of California To Cause Cancer. The warning above is provided in accordance with the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).

#### *Polyisocyanurate Foam:*

No information available.

#### *Fibreglass:*

Results from epidemiological studies have not shown any increase in respiratory disease or cancer. The International Agency for Research on Cancer (IARC) has classified continuous filament fibreglass "Not Classifiable as to Carcinogenicity to Humans" (Group 3). (2)

#### *Carbon Black:*

The International Agency for Research on Cancer (IARC) has concluded that there is inadequate evidence for the carcinogenicity of carbon black to humans and that there is sufficient evidence that carbon black is carcinogenic to experimental animals. The International Agency for Research on Cancer (IARC) has concluded that this chemical is possibly carcinogenic to humans (Group 2B). The American Conference of Governmental Industrial Hygienists (ACGIH) has designated this chemical as not classifiable as a human carcinogen (A4). The US National Toxicology Program (NTP) has not listed this chemical in its report on carcinogens. (1)

#### MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Any condition generally aggravated by mechanical irritants in the air or on the skin. Specific data are not available which address medical conditions that are generally recognized as being aggravated by exposure to this product.

### SECTION IV. FIRST AID MEASURES

#### SKIN CONTACT:

Wash with soap and cool running water.

#### EYE CONTACT:

Flush eyes with running water for at least 15 minutes. Do not rub or wipe eyes. If irritation persists, consult a medical professional.

#### INHALATION:

Remove to fresh air. Drink water to clear throat and blow nose to remove dust.

#### INGESTION:

Product is not intended to be ingested or eaten. If product is ingested, irritation of the gastrointestinal tract may occur, and should be treated symptomatically. Do not induce vomiting. Rinse mouth with water to remove particles, and drink plenty of water to help reduce the irritation. [No chronic effects are expected following ingestion.]

*Note to Physician: This product is a mechanical irritant. it is not expected to produce any chronic health effects from acute exposures. Treatment should be directed toward removing the source of irritation with symptomatic treatment as necessary.*

### SECTION V. FIRE-FIGHTING MEASURES

**FLAMMABILITY:** Not applicable

**EXPLOSION DATA:** Not applicable

**FLASH POINT:** Not applicable (product is not a liquid).  
≤ - 37°C (pentane)

**AUTO-IGNITION TEMPERATURE:** Not determined

**INFLAMMABILITY LIMITS IN AIR:** (% in volume) 1.5 % (35,000 mg/m<sup>3</sup>) – 7.8 % (pentane)

#### FIRE HAZARDS:

This product is a solid article that will burn if exposed to an ignition source of sufficient heat and intensity, or open flame, such as a welder's torch. It should be installed with a 15-minute thermal barrier between it and the structure's interior.

## SECTION V. FIRE-FIGHTING MEASURES

### COMBUSTION PRODUCTS:

Under certain fire conditions, combustible gases can be generated creating rapidly spreading, high intensity flames and dense, black smoke. Burning of this product can produce irritating and potentially toxic fumes and gases, including carbon monoxide and carbon dioxide; other determined hydrocarbon fractions could be released in small quantities.

Pentane vapors may be emitted from freshly produced foam or when product is heated. Pentane concentrations between the lower and upper explosive limits

Pentane vapors may be emitted from freshly produced foam or when product is heated. Pentane concentrations between the lower and upper explosive limits (LEL and UEL) may accumulate under unique circumstances inside a sealed container or within confined areas. If such concentrations are provided a source of ignition, there may be a very high rate of flame propagation.

### EXTINGUISHING MEDIA:

Water spray/fog, CO<sub>2</sub>, dry chemical (consider media appropriate for surrounding materials).

### SPECIAL PROCEDURES:

Self-contained breathing apparatus (SCBA).

## SECTION VI. ACCIDENTAL RELEASE MEASURES

**RELEASE OR SPILL:** Do not discard residues into sewers, storm sewers, or surface waters. If accidentally released to a water body, material will float and disperse with wind and current; contain the material with booms and remove either manually or with a vacuum truck. If accidentally released to land, scoop up material and put into suitable container for disposal. Chemicals in this material are not expected to cause harm to aquatic or terrestrial plants or animals; however, fish or other animals may eat the product, which could obstruct their digestive tracts. Be a good steward of the environment and clean up residues (some components of the product are not biodegradable).

## SECTION VII. HANDLING AND STORAGE

**HANDLING:** Cutting of product should be done in a manner to reduce or control generation of airborne dusts. Avoid unnecessary dust exposures when cutting or abrading by using adequate local or general ventilation. Avoid dust contact with ignition sources. Handle product using good industrial hygiene and safety practices.

**STORAGE:** Store in a dry, well-ventilated area. Assure storage containers or areas and shipping containers are adequately ventilated. No Smoking – No Matches – No Lighters – No Welding rules should be enforced. Install according to manufacturer's recommendations.

## SECTION VIII. EXPOSURE CONTROLS / PERSONAL PROTECTION

**RESPIRATORY:** If respiratory tract irritations occurs or if any dust exposure limit is exceeded, use a respirator such as 3M Model 8271 or Model 8210, or equivalent for protection against nuisance dusts. When normal ventilation is provided to work area, no respiratory protection is needed for pentane vapor.

**EYES:** Goggles or safety glasses with side shields are recommended.

**PROTECTIVE CLOTHING:** To avoid skin irritation from excessive dust generated during cutting operations, wear long-sleeved, loose fitting clothing, long pants, and gloves.

**HYGIENIC PRACTICES:** Exposed skin areas should be washed with soap and cool water after working with product. Clothing should be laundered separately from other clothes.

## SECTION IX. PHYSICAL AND CHEMICAL PROPERTIES

<b>PHYSICAL STATE:</b>	Solid
<b>APPEARANCE:</b>	White or cream-coloured solid with a dark grey glass fiber reinforced felt facing on both sides
<b>ODOUR:</b>	Negligible
<b>VAPOUR DENSITY (air = 1):</b>	Not applicable
<b>VAPOUR PRESSURE:</b>	Not applicable
<b>EVAPORATION RATE (Butyl acetate = 1):</b>	Not applicable
<b>BOILING POINT (760 mm Hg):</b>	Not applicable
<b>SPECIFIC GRAVITY (H<sub>2</sub>O = 1):</b>	< 1
<b>SOLUBILITY IN WATER (20°C):</b>	Insoluble
<b>MELTING POINT:</b>	> 250°F
<b>PERCENT VOLATILE BY VOLUME:</b>	< 1
<b>pH:</b>	Not applicable

**SECTION X. STABILITY AND REACTIVITY**

<b>STABILITY:</b>	Stable. Service temperature range: -100 to 250°F.
<b>CONDITIONS OF REACTIVITY:</b>	Stable
<b>INCOMPATIBILITY:</b>	To prevent structural deterioration, avoid contact with acetone, methyl ethyl ketone, tetrahydrofuran, chlorine, chloroform, hydrogen peroxide, ethylene dichloride, dimethyl sulfoxide, and dimethyl formamide.
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	None identified.
<b>HAZARDOUS POLYMERISATION:</b>	Will not occur.

**SECTION XI. TOXICOLOGICAL INFORMATION****TOXICOLOGICAL DATA:*****Polyisocyanurate Foam and Fibreglass:***

Not available

***Carbon Black:*** LC50 (rat): 6 750 mg/kg (4-hour exposure)  
 LD50 (oral, rat): Not available  
 LD50 (dermal, rabbit): Not available

***Pentane:*** LC50 (rat): 364,000 mg/m<sup>3</sup> (air) (4-hour exposure)  
 LD50 (mouse): 446 mg/kg  
 LD50 (dermal, rabbit): Not available

***Formaldehyde:*** LC50 (mouse): 440 mg/m<sup>3</sup> (air) (2-hour exposure)  
 LD50 (oral, mouse): 42 mg/kg  
 LD50 (oral, rat): 100 mg/kg

***Effects of Short-Term (Acute) Exposure*****INHALATION:*****Polyisocyanurate Foam:***

No information available.

***Fibreglass:***

Many studies have been conducted to determine the potential long-term effects of fibrous glass inhalation. Although inconclusive, some research supported by the industry indicates that manufacturing plant employees who were first employed more than 30 years ago in factories that manufactured glass wool and mineral wool have an increased rate of lung cancer as compared to certain other reference populations. Similar findings were not reported regarding employees in textile fibre manufacturing plants. Animal studies have not demonstrated an increased rate of lung cancer when the animals breathed large quantities of glass fibres. Artificial implantation or injection of fine glass fibres into the chest, abdominal cavity or trachea of laboratory animals has produced cancer. (2)

***Carbon Black:***

Some effects on the lower lung (alveolar thickening and atelectasis) were observed in rats following continuous inhalation of 4 mg/m<sup>3</sup> channel black for 16 days. Conflicting or insignificant results were obtained in 3 other studies. (1)

**EYE IRRITATION:*****Polyisocyanurate Foam and Fibreglass:***

No information available.

***Carbon Black:***

Suspensions of carbon and graphite produced no signs of inflammation even when injected into the eyes of rabbits. (1)

**SKIN IRRITATION:*****Polyisocyanurate Foam, Fibreglass and Carbon Black:***

No information available.

***Effects of Long-Term (Chronic) Exposure*****INHALATION:*****Polyisocyanurate Foam:***

One animal study has reported lung cancer following exposure to high levels of dust, subsequent animal studies have not shown that result. Emphysema has been produced in animals following exposure to high levels of dust. (2)

***Fibreglass:*** No information available.

***Carbon Black:***

Many inhalation exposure studies have been conducted in experimental animals. In general, these studies show that excessive accumulation of carbon black in the lungs can result in significant inflammatory responses. IARC has suggested that the inflammatory response to an excessive lung burden of carbon black may subsequently result in fibrotic changes. (1)

**TARGET ORGANS:*****Polyisocyanurate Foam, Fibreglass and Carbon Black:***

No information available.

## SECTION XI. TOXICOLOGICAL INFORMATION

### **CARCINOGENICITY:**

#### ***Polyisocyanurate Foam:***

No information available.

#### ***Fibreglass:***

The International Agency for Research on Cancer (IARC) classified continuous filament fiber glass as a Group 3 substance, "not classifiable as to its carcinogenicity to humans". (2)

#### ***Carbon Black:***

The International Agency for Research on Cancer (IARC) has determined that there is sufficient evidence that carbon black is carcinogenic to experimental animals. An increased incidence of lung tumours has been observed in 3 studies using female rats, but not in male rats or in mice. No increase in skin tumours was observed following skin application of either oil suspension or water suspensions containing 10% or 20% carbon black (various types). When benzene extracts of carbon black were used, however, increases in skin tumours were observed. (1)

### **REPRODUCTIVE EFFECTS:**

#### ***Polyisocyanurate Foam, Fibreglass and Carbon Black:***

No information available.

### **TERATOGENICITY, EMBRYOTOXICITY, FETOTOXICITY:**

#### ***Polyisocyanurate Foam, Fibreglass and Carbon Black:***

No information available.

### **MUTAGENICITY:**

#### ***Polyisocyanurate Foam and Fibreglass:***

No information available.

#### ***Carbon Black:***

Both positive and negative results have been obtained in rats in vivo studies. Positive results have been obtained in somatic cells following inhalation exposure of rats. Generally, negative results have been obtained in short-term assays using bacteria and cultured mammalian cells and in insects. (1)

## SECTION XII. ECOLOGICAL INFORMATION

### **WORK AREA CLEANUP:**

Pick up large pieces; do not wash down drain. Sweep or vacuum smaller pieces into a waste container for disposal. If needed, use water spray to wet down and minimize dust generation. Do not dry sweep dust accumulation or use compressed air for cleanup.

## SECTION XIII. DISPOSAL CONSIDERATIONS

### **WASTE DISPOSAL:**

This product, if discarded as supplied, is not considered a hazardous waste under RCRA (40 CFR 261) and may be placed directly into receptacles that will transport the waste to a municipal waste, industrial waste, or demolition waste landfill. If contact with a contaminating substance alters the material, it is the user's responsibility to determine at the time of disposal whether it meets RCRA criteria for hazardous waste. Dispose in accordance with federal, state and local regulations.

## SECTION XIV. TRANSPORT INFORMATION

**TRANSPORTATION REGULATIONS:** This product is not regulated as a hazardous material in transportation.

## SECTION XV. REGULATORY INFORMATION

**TSCA:** All chemicals in this product are listed on the TSCA Inventory. TSCA 12(b) expert notification requirements do not apply to this product.

**SARA TITLE III:** There is no Section 302 extremely hazardous substance in this product. Reporting requirements under Sections 311, 312, or 313 do not apply. [Diisocyanate precursors do not remain in the polymer foam of this product.]

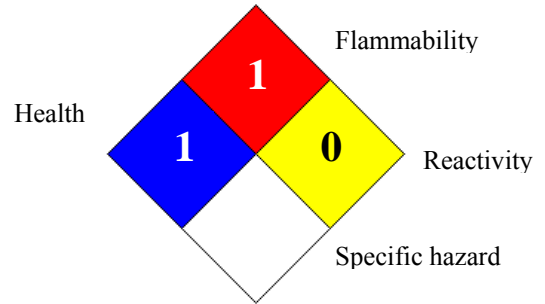
All chemicals and component categories found on state lists are addressed in the MSDS.

This product has been classified in accordance with the hazard criteria of Canada's *Controlled products Regulations* and the MSDS contains all of the information required by said regulations. All chemical components are on Canada's Domestic Substances List (DSL). Pentane and carbon black are the only constituents on Canada's Ingredients Disclosure List (IDL) that exceed threshold concentrations.

**HMIS (USA):**

1	<b>HEALTH</b>
1	<b>FLAMMABILITY</b>
0	<b>REACTIVITY</b>
	<b>PROTECTIVE EQUIPMENT</b>

**NFPA (USA):**



## SECTION XVI. OTHER INFORMATION

**Glossary:**

<b>ACGIH:</b>	American Conference of Governmental Industrial Hygienists
<b>ANSI:</b>	American National Standards Institute
<b>CAS:</b>	Chemical Abstract Services
<b>CFR:</b>	Code of Federal Regulations (United States)
<b>DOT:</b>	Department of Transportation
<b>DSL:</b>	Domestic Substances List (Canada)
<b>EPA:</b>	Environmental Protection Agency
<b>HMIS:</b>	Hazardous Material Information System
<b>IARC:</b>	International Agency for Research on Cancer
<b>LC50:</b>	(Lethal concentration <sub>50</sub> ) Concentration of a substance in air that causes dead of 50% mortality of a defined animal population.
<b>LD50:</b>	(Lethal dose <sub>50</sub> ) Single dose of a substance that, when administrated by a define route in an animal assay, is expected to cause the death of 50% of a defined animal population.
<b>NIOSH:</b>	National Institute for Occupational Safety and Health
<b>NFPA:</b>	National Fire Protection Association
<b>NTP:</b>	National Toxicology Program
<b>OSHA:</b>	Occupational Safety & Health Administration
<b>RCRA:</b>	Resource Conservation and Recovery Act
<b>SARA:</b>	Superfund Amendments and Reorganization Act
<b>TDG:</b>	Transportation Dangerous Goods
<b>TLV:</b>	Threshold Limit Value
<b>TWA:</b>	Time-weighted average
<b>TSCA:</b>	Toxic Substances Control Act
<b>WHMIS:</b>	Workplace Hazardous Materials Information System

**Reference:**

- (1) CHEMINFO (2006) Canadian Centre of Organisational Health and Safety, Hamilton (Ontario) Canada
- (2) Material Safety Data Sheet of the supplier.

**This MSDS has been prepared by:** Marie-Claude Fontaine  
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The Material Safety Data Sheets of Soprema are available on Internet at the following site: <http://www.soprema.ca>

**Justification of the update:**

- New product.

This MSDS contains all the information required by ANSI Z-400.1-1998 standard (United States), by regulation 29 CFR Part 1910.1200 of the Hazard Communication Standard of OSHA, and is in accordance with standard DORS/88-66 OF WHMIS Canada.

**To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier or any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.**