

## SAFETY DATA SHEET – MME FLEXIBLE RESIN

### SECTION 1. IDENTIFICATION

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<b>Product Identifier</b>	MME Flexible Resin
<b>Other Means of Identification</b>	Flex Resin; Flexible Resin
<b>Recommended Use</b>	Hydrophobic polyurethane resin for concrete crack injection.
<b>Restrictions on Use</b>	Professional use only
<b>Supplier Identifier</b>	Multiurethanes Ltd. 5245 Creekbank Rd, Mississauga, ON L4W 1N3 (Canada)
<b>Emergency Telephone Number</b>	1-800-663-6633

### SECTION 2. HAZARD IDENTIFICATION

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**Classification** This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Skin Corrosion/Irritation - Category 2  
Serious Eye Damage/Eye Irritation - Category 2A  
Respiratory Sensitization - Category 1  
Skin Sensitization - Category 1  
Carcinogenicity – Category 2  
Specific Target Organ Toxicity (Single Exposure) (Respiratory tract irritation) - Category 3  
Specific Target Organ Toxicity (Repeated Exposure) (kidneys, respiratory system) - Category 2

**Label Elements**

Hazard Pictograms



Signal Word

DANGER

Hazard Statements

Causes serious eye irritation.  
Causes skin irritation.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause an allergic skin reaction.  
Suspected of causing cancer.  
May cause respiratory irritation.  
May cause damage to organs through prolonged or repeated exposure (kidneys, respiratory system).

Precautionary Statements

**Prevention**

Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Wear appropriate protective equipment.

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Avoid breathing fume/mist/vapours.  
Use only outdoors or in a well-ventilated area.  
Wash hands thoroughly after handling.

### **Response**

IF ON SKIN: Wash with plenty of soap and water. If irritation or rash occurs, seek medical attention.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, seek medical attention.  
IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. Seek medical attention.

### **Storage**

Keep container tightly closed and sealed until ready for use. Store in original container protected from high temperatures. Keep away from incompatibles.

### **Disposal**

Dispose of material in accordance with all applicable federal, state/provincial, and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the sole responsibility of the waste generator.

**Other Hazards** None known

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Mixture

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Concentration (% by weight)</u>	<u>Common Names / Synonyms</u>	<u>Other Identifiers</u>
Dibutyl maleate	105-76-0	30 - 60%	Not available	Not available
4,4'-Methylenediphenyl Diisocyanate	101-68-8	10 - 30%	Not available	Not available
4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6	5 - 10%	Not available	Not available
Methylenediphenyl diisocyanate	26447-40-5	0.1 - 1%	Not available	Not available

### Notes

The exact percentage (concentration) in the composition has been withheld as a trade secret following the amended HPR as of April 2018 (Canada) and with paragraph (i) of §1910.1200. There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

## SECTION 4. FIRST-AID MEASURES

### Inhalation

Remove the victim to fresh air and keep them at rest comfortably for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Seek medical attention. If necessary, call a poison centre or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt, or

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waistband. Symptoms may be delayed in the inhalation of decomposition products during a fire. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.

<b>Skin Contact</b>	Wash with plenty of soap and water. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 20 minutes. Seek medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
<b>Eye Contact</b>	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Seek medical attention.
<b>Ingestion</b>	Wash out mouth with water. Remove dentures, if any. Remove the victim to fresh air and keep them at rest comfortably for breathing. If the material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick, as vomiting may be dangerous. Do not induce vomiting unless medical personnel instruct it. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt, or waistband.
<b>Most Important Symptoms and Effects, Acute and Delayed</b>	Causes serious eye irritation. Adverse symptoms may include pain, irritation, watering, and redness. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Adverse symptoms may include respiratory tract irritation, coughing, wheezing, breathing difficulties, and asthma. Causes skin irritation. May cause an allergic skin reaction. Adverse symptoms may include irritation and redness.
<b>Indication of Immediate Medical Attention and Special Treatment Needed</b>	Symptoms may be delayed in the inhalation of decomposition products during a fire. The exposed person may need to be kept under medical surveillance for 48 hours. Treat symptomatically. If exposed or concerned, seek medical advice and attention. No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

### SECTION 5. FIRE-FIGHTING MEASURES

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<b>Extinguishing Media</b>	<p><u>Suitable Extinguishing Media</u> Use an extinguishing agent suitable for the surrounding fire.</p> <p><u>Unsuitable Extinguishing Media</u> None known</p>
<b>Specific Hazards Arising from the Product</b>	No specific fire or explosion hazard. Decomposition products may include the following materials: carbon dioxide, carbon monoxide, and nitrogen oxides.
<b>Special Protective Equipment and Precautions for Firefighters</b>	If there is a fire, promptly isolate the scene by removing all persons from the vicinity of the incident. No action shall be taken involving any personal risk

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or without suitable training. Firefighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece in positive pressure mode.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

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**Personal Precautions, Protective Equipment and Emergency Procedures**

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe fume/mist/vapours. Provide adequate ventilation. Wear an appropriate respirator when ventilation is inadequate. Use appropriate personal protective equipment.

**Methods and Material for Containment and Cleaning Up**

Stop the leak if it is without risk. Move containers from the spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements, or confined areas. Wash spillages into an effluent treatment plant and proceed as follows: Contain and collect the spillage with non-combustible, absorbent material, e.g., sand, earth, vermiculite, or diatomaceous earth, and place it in a container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.

**Notification Procedures**

Not available

**Environmental Precautions**

Avoid dispersal of spilled material, runoff, and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil, or air).

### SECTION 7. HANDLING AND STORAGE

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**Precautions for Safe Handling**

Put on appropriate personal protective equipment (refer to section 8). Persons with a history of skin sensitization problems, asthma, allergies, or chronic or recurrent respiratory disease should not be employed in any process using this product. Avoid exposure – obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in the eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear an appropriate respirator when ventilation is inadequate. Keep it in the original container or an approved alternative made from a compatible material, and keep it tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse the container. Good housekeeping is needed when storing, transferring, handling, and using this material. Handle following good industrial hygiene and safety procedures. Always wash your hands immediately after handling this product.

**Conditions for Safe Storage (including incompatibilities)**

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool, and well-ventilated area, away from incompatible materials (water, amines, strong bases, alcohols, copper alloys, aluminum) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

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### SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

#### Control Parameters – Occupational Exposure Limits

Chemical Name	Type	Exposure Limit Values	Source
4,4'-Methylenediphenyl Diisocyanate	OEL	0.005 ppm 8 hours 0.05 mg/m <sup>3</sup> 8 hours	AB (CA, 06/2018)
4,4'-Methylenediphenyl Diisocyanate	TWA	0.005 ppm 8 hours	ACGIH TLV (US, 03/2018); BC (CA, 07/2018); ON (CA, 01/2018); SK (CA, 07/2013)
4,4'-Methylenediphenyl Diisocyanate	TWA	0.05 mg/m <sup>3</sup> 10 hours 0.005 ppm 10 hours	NIOSH REL (US, 10/2016)
4,4'-Methylenediphenyl Diisocyanate	CEIL	0.2 mg/m <sup>3</sup> 10 minutes 0.02 ppm 10 minutes	NIOSH REL (US, 10/2016)
4,4'-Methylenediphenyl Diisocyanate	CEIL	0.2 mg/m <sup>3</sup> ; 0.02 ppm	OSHA PEL (US, 05/2018)
4,4'-Methylenediphenyl Diisocyanate	CEIL	0.01 ppm	BC (CA, 07/2018)
4,4'-Methylenediphenyl Diisocyanate	TWAEV	0.005 ppm 8 hours 0.051 mg/m <sup>3</sup> 8 hours	QC (CA, 01/2014)
4,4'-Methylenediphenyl Diisocyanate	STEL	0.015 ppm 15 minutes	SK (CA, 07/2013)
Methylenediphenyl diisocyanate	TWA	0.005 ppm 8 hours	BC (CA, 07/2018); ON (CA, 01/2018)
Methylenediphenyl diisocyanate	CEIL	0.01 ppm	BC (CA, 07/2018)
Methylenediphenyl diisocyanate	CEIL	0.02 ppm	ON (CA, 01/2018)

#### Appropriate Engineering Controls

Use only adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

#### Individual Protection Measures

##### Eye/Face Protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates it is necessary to avoid exposure to liquid splashes, mists, gases, or dust. If contact is possible, the following protection should be worn unless the assessment indicates a higher degree of protection: chemical splash goggles.

##### Skin Protection

If a risk assessment indicates this is necessary, chemical-resistant, impervious gloves complying with an approved standard should always be worn when handling chemical products. Considering the parameters specified by the glove manufacturer, check that the gloves retain their protective properties during use. It should be noted that the time to breakthrough for any glove material may differ for different manufacturers. In the cases of mixtures consisting of several substances, the protection time of the gloves cannot be accurately estimated. Personal protective equipment for the body should be selected based on the task and the risks involved and approved by a specialist before handling this product. Appropriate footwear and additional skin protection measures should be chosen based on the task and the risks involved and approved by a specialist before handling this product.

##### Respiratory Protection

Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used

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according to a respiratory protection program to ensure proper fitting, training, and other essential uses.

### Hygiene Measures

Wash hands, forearms, and face thoroughly after handling chemical products, before eating, smoking, using the lavatory, and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing it. Ensure that eyewash stations and safety showers are nearby.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

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<b>Appearance</b>	Clear/cloudy to pale yellow liquid
<b>Odour</b>	Not available
<b>Odour Threshold</b>	Not available
<b>pH</b>	Not available
<b>Melting Point / Freezing Point</b>	Not available
<b>Initial Boiling Point and Boiling Range</b>	Not available
<b>Flash Point</b>	>93.3°C (>199.9°F) (closed cup method)
<b>Evaporation Rate (BuAe = 1)</b>	Not available
<b>Flammability (solid, gas)</b>	Not available
<b>Upper/Lower Flammability or Explosive Limits</b>	Not available
<b>Vapour Pressure</b>	Not available
<b>Vapour Density (air = 1)</b>	Not available
<b>Relative Density (water = 1)</b>	1.055 ± 0.015
<b>Solubility in Water</b>	Insoluble in water. Reacts slowly with water to liberate carbon dioxide.
<b>Solubility (other)</b>	Not available
<b>Partition Coefficient, n-octanol / water (logKow)</b>	Not available
<b>Auto-ignition Temperature</b>	Not available
<b>Decomposition Temperature</b>	Not available
<b>Viscosity</b>	Dynamic (room temperature): 400 to 600 mPa·s (400 to 600 cP)

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### SECTION 10. STABILITY AND REACTIVITY

<b>Reactivity</b>	No specific test data related to reactivity is available for this product or its ingredients.
<b>Chemical Stability</b>	Stable under recommended handling and storage conditions (refer to section 7).
<b>Possibility of Hazardous Reactions</b>	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Conditions to Avoid</b>	Avoid extreme heat, direct sunlight, and moisture.
<b>Incompatible Materials</b>	Water, amines, strong bases, alcohols, copper alloys, and aluminum.
<b>Hazardous Decomposition Products</b>	By heat and fire: carbon monoxide, oxides of nitrogen, hydrogen.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Toxicological Data

<u>Chemical Name</u>	<u>LC50</u>	<u>LD50</u>
Dibutyl maleate	Not available	Dermal, rabbit: 10 g/kg
4,4'-Methylenediphenyl Diisocyanate	Not available	Oral, rat: 9200 mg/kg

#### Irritation/Corrosion

<u>Chemical Name</u>	<u>Result</u>	<u>Species: Exposure</u>
4,4'-Methylenediphenyl Diisocyanate	Eyes – moderate irritant	Rabbit: 100 mg

**Respiratory and/or Skin Sensitization**                      There is no data available.

**Serious Eye Damage / Irritation**                      Not available

**Specific Target Organ Toxicity - Single Exposure**

4,4'-Methylenediphenyl Diisocyanate  
Category 3 – Respiratory tract irritation

4,4'-Methylenediphenyl diisocyanate, oligomers  
Category 3 – Respiratory tract irritation

Methylenediphenyl diisocyanate  
Category 3 – Respiratory tract irritation

**Specific Target Organ Toxicity - Repeated Exposure**

Dibutyl maleate  
Category 2 – kidneys

4,4'-Methylenediphenyl Diisocyanate  
Category 2 – respiratory system

4,4'-Methylenediphenyl diisocyanate, oligomers  
Category 2 – respiratory system



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4,4'-Methylenediphenyl Diisocyanate  
LogP<sub>ow</sub> = 4.51; BCF = 200; Potential = Low

4,4'-Methylenediphenyl diisocyanate, oligomers  
LogP<sub>ow</sub> = 8.56; BCF = 200; Potential = Low

Methylenediphenyl diisocyanate  
LogP<sub>ow</sub> = 4.51; BCF = 200; Potential = Low

**Mobility in Soil** Not available

**Other Adverse Effects** No known significant effects or critical hazards.

### SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal Methods** The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions, and by-products should comply with environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated in the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of safely. Care should be taken when handling empty containers not cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material, runoff, and contact with soil, waterways, drains and sewers.

### SECTION 14. TRANSPORT INFORMATION

<u>Regulation</u>	<u>UN No.</u>	<u>Proper Shipping Name</u>	<u>Technical Name (for N.O.S. entry)</u>	<u>Transport Hazard Class(es)</u>	<u>Packing Group</u>
TDG	None	Not regulated	Not regulated	Not regulated	Not regulated
49 CFR/DOT	None	Not regulated	Not regulated	Not regulated	Not regulated
<b>Additional information</b>	<p><b>DOT (RQ) Details:</b> 4,4'-Methylenediphenyl Diisocyanate 5000 lbs / 2270 kg</p> <p><b>DOT Classification:</b> Reportable quantity = 29950.9 lbs / 13597.7 kg [3404.9 gal / 12888.8 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ transportation requirements.</p>				
IMDG	None	Not regulated	Not regulated	Not regulated	Not regulated
ICAO/IATA	None	Not regulated	Not regulated	Not regulated	Not regulated

**Tariff Classification Number** 3909.50.5000

**Special Precautions** For transport within the user's premises, always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do during an accident or spillage.

**Environmental Hazards** Refer to section 12.

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Transport in bulk according to  
Annex II of MARPOL 73/78 and the  
IBC Code

Not available

### SECTION 15. REGULATORY INFORMATION

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#### Canadian Information

Canada inventory (DSL/NDSL)

All components are listed or exempted.

NPRI

The following components are listed: 4,4'-Methylenediphenyl Diisocyanate.

CEPA Toxic Substances

The following components are listed: 4,4'-Methylenediphenyl Diisocyanate.

#### US Information

United States Inventory (TSCA 8b)

All components are listed or exempted.

Clean Water Act (CWA) 307

4,4'-Methylenediphenyl Diisocyanate

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)

Listed

Clean Air Act Section 602 Class I Substances; Clean Air Act Section 602  
Class II Substances; DEA List I Chemicals (Precursor Chemicals); DEA List  
II Chemicals (Essential Chemicals)

Not listed

SARA 302/304

No products were found.

SARA 311/312

Skin Corrosion/Irritation – Category 2

Serious Eye Damage/Eye Irritation – Category 2A

Respiratory Sensitization – Category 1

Skin Sensitization – Category 1

Carcinogenicity – Category 2

Specific Target Organ Toxicity (Single Exposure) (Respiratory tract  
irritation) – Category 3

Specific Target Organ Toxicity (Repeated Exposure) (kidneys, respiratory  
system) – Category 2

*Dibutyl maleate*

Skin Sensitization – Category 1

Specific Target Organ Toxicity (Repeated Exposure) (kidneys) (oral) –  
Category 2

*4,4'-Methylenediphenyl Diisocyanate*

Acute Toxicity (inhalation) – Category 4

Skin Corrosion/Irritation – Category 2

Serious Eye Damage/Eye Irritation – Category 2A

Respiratory Sensitization – Category 1

Skin Sensitization – Category 1

Carcinogenicity – Category 2

Specific Target Organ Toxicity (Single Exposure) (Respiratory tract  
irritation) – Category 3

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Specific Target Organ Toxicity (Repeated Exposure) (respiratory system) (inhalation) – Category 2

*4,4'-Methylenediphenyl diisocyanate, oligomers*

Acute Toxicity (inhalation) – Category 4

Skin Corrosion/Irritation – Category 2

Serious Eye Damage/Eye Irritation – Category 2A

Respiratory Sensitization – Category 1

Skin Sensitization – Category 1

Carcinogenicity – Category 2

Specific Target Organ Toxicity (Single Exposure) (Respiratory tract irritation) – Category 3

Specific Target Organ Toxicity (Repeated Exposure) (respiratory system) (inhalation) – Category 2

*Methylenediphenyl diisocyanate*

Acute Toxicity (inhalation) – Category 4

Skin Corrosion/Irritation – Category 2

Serious Eye Damage/Eye Irritation – Category 2A

Respiratory Sensitization – Category 1

Skin Sensitization – Category 1

Carcinogenicity – Category 2

Specific Target Organ Toxicity (Single Exposure) (Respiratory tract irritation) – Category 3

Specific Target Organ Toxicity (Repeated Exposure) – Category 2

SARA 313

Form R – Reporting Requirements: 4,4'-Methylenediphenyl Diisocyanate (CAS #101-68-8)

Supplier Notification: 4,4'-Methylenediphenyl Diisocyanate (CAS #101-68-8)

State Regulations (MA, NY, NJ, PA)

The following components are listed: 4,4'-Methylenediphenyl Diisocyanate

State Regulation (California Prop. 65)

This product does not require a Safe Harbor warning under California Prop. 65.

**International Information**

Not available

**SECTION 16. OTHER INFORMATION**

**Date of Latest Revision**

July 4, 2024

**Disclaimer**

The information provided in this document is correct to the best of our knowledge, information, and belief at the date of its publication. This information is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition. This information is designed only as general guidance and should not be considered a warranty or quality specification. This information relates only to the specific material designated. Unless specified above, it may not be valid for such material used in combination with other materials or in any process.

**END OF SAFETY DATA SHEET**