

Material Safety Data Sheet

Cold, Liquid Applied Exposed Roofing Membrane (Bramal Membrane)

1. Product and company identification

Product name	: Cold, Liquid Applied Exposed Roofing Membrane (Bramal Membrane)
Material uses	: Roofing cover membrane.
Supplier/Manufacturer	: Bramal Inc. 4 rue de Transport Cotreau-du-Lac, QC Canada J0P 1B0 Tel: (450) 763-1443 Fax: (450) 763-1550
Responsible name	: Atrion Regulatory Services, Inc.
In case of emergency	: To be determined

2. Hazards identification

Physical state	: Liquid.
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview	: DANGER! MAY BE FATAL IF INHALED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. Very toxic by inhalation. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact. Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not get on skin or clothing. Avoid contact with eyes. Contains material that can cause target organ damage. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
Potential acute health effects	
Inhalation	: Very toxic by inhalation. Irritating to respiratory system. May cause sensitization by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion	: No known significant effects or critical hazards.
Skin	: Irritating to skin. May cause sensitization by skin contact.
Eyes	: Irritating to eyes.
Potential chronic health effects	
Chronic effects	: Contains material that can cause target organ damage.
Carcinogenicity	: Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Target organs	: Contains material which causes damage to the following organs: lungs, upper respiratory tract, eye, lens or cornea, nose/sinuses, throat.
Over-exposure signs/symptoms	

2 . Hazards identification

- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
wheezing and breathing difficulties
asthma
- Ingestion** : No specific data.
- Skin** : Adverse symptoms may include the following:
irritation
redness
- Eyes** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Medical conditions aggravated by over-exposure** : Pre-existing respiratory and skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

3 . Composition/information on ingredients

United States

Name	CAS number	%
Natural Rubber	9006-04-6	30 - 60
Paraffin waxes and Hydrocarbon waxes, chloro	63449-39-8	10 - 30
Aluminum hydroxide	21645-51-2	10 - 30
Benzene, 1,1'-methylenebis(isocyanato-	26447-40-5	1 - 5
4,4'-Methylenediphenyl diisocyanate	101-68-8	1 - 5

Canada

Name	CAS number	%
Natural Rubber	9006-04-6	30 - 60
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4,4'-Methylenediphenyl diisocyanate	101-68-8	1 - 5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First aid measures

- Eye contact** : Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention.
- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.
- Ingestion** : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.
- Protection of first-aiders** : 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.
- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5 . Fire-fighting measures

- Flammability of the product** : May be combustible at high temperature.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
 - Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
carbonyl halides
metal oxide/oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

- Personal precautions** : 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. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilled material and 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). Water polluting material. May be harmful to the environment if released in large quantities.
- Methods for cleaning up**
- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
 - Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

- Handling** : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

7 . Handling and storage

Storage : 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 (see section 10) and food and drink. 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.

8 . Exposure controls/personal protection

United States

Product name

Exposure limits

Natural Rubber

ACGIH TLV (United States, 1/2005). Skin

TWA: 0.001 mg/m³ 8 hour(s). Form: All forms.

TWA: 0.001 mg/m³, (as total proteins) 8 hour(s).

Aluminum hydroxide

NIOSH REL (United States, 12/2001).

TWA: 2 mg/m³, (as Al) 10 hour(s).

OSHA PEL 1989 (United States, 3/1989).

TWA: 2 mg/m³, (as Al) 8 hour(s).

ACGIH TLV (United States, 1/2007).

TWA: 2 mg/m³, (as Al) 8 hour(s). Form: Soluble

4,4'-Methylenediphenyl diisocyanate

ACGIH TLV (United States, 1/2007).

TWA: 0.005 ppm 8 hour(s).

NIOSH REL (United States, 12/2001).

CEIL: 0.2 mg/m³ 10 minute(s).

CEIL: 0.02 ppm 10 minute(s).

TWA: 0.05 mg/m³ 10 hour(s).

TWA: 0.005 ppm 10 hour(s).

OSHA PEL (United States, 11/2006).

CEIL: 0.2 mg/m³

CEIL: 0.02 ppm

Canada

Product name

Exposure limits

Natural Rubber

CA British Columbia Provincial (Canada, 7/2007). Skin, Skin sensitizer

TWA: 0.001 mg/m³, (Total) 8 hour(s). Form: Inhalable

CA Ontario Provincial (Canada, 3/2007). Skin

TWA: 0.001 mg/m³, (Total) 8 hour(s).

Aluminum hydroxide

CA Ontario Provincial (Canada, 3/2007).

TWAEV: 2 mg/m³ 8 hour(s).

CA Quebec Provincial (Canada, 12/2006).

TWAEV: 2 mg/m³, (as Al) 8 hour(s).

CA British Columbia Provincial (Canada, 7/2007).

TWA: 10 mg/m³ 8 hour(s). Form: Total dust

TWA: 3 mg/m³ 8 hour(s). Form: Respirable dust

Benzene, 1,1'-methylenebis(isocyanato-

CA British Columbia Provincial (Canada, 7/2007).

TWA: 0.005 ppm 8 hour(s).

STEL: 0.01 ppm 15 minute(s).

4,4'-Methylenediphenyl diisocyanate

CA Alberta Provincial (Canada, 10/2006).

8 hrs OEL: 0.005 ppm 8 hour(s).

8 hrs OEL: 0.051 mg/m³ 8 hour(s).

CA British Columbia Provincial (Canada, 7/2007). Skin, Skin sensitizer

TWA: 0.005 ppm 8 hour(s).

STEL: 0.01 ppm 15 minute(s).

CA Quebec Provincial (Canada, 12/2006). Skin sensitizer

8 . Exposure controls/personal protection

TWAEV: 0.005 ppm 8 hour(s).
TWAEV: 0.051 mg/m³ 8 hour(s).

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with 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.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and 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. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Eyes : Splash goggles.

Skin : Overall.

Respiratory : Vapor respirator.

Hands : Neoprene gloves.

Personal protective equipment (Pictograms) :



HMIS Code/Personal protective equipment : G

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state : Liquid.

10 . Stability and reactivity

Stability : The product is stable.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to avoid : Avoid exposure - obtain special instructions before use.

Materials to avoid : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Conditions of reactivity : None known.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Species	Dose	Result	Exposure
Paraffin waxes and Hydrocarbon waxes, chloro	Rabbit	>10 mL/kg	LD50 Dermal	-
	Rat	26100 mg/kg	LD50 Oral	-
	Rat	>21500 uL/kg	LD50 Oral	-
4,4'-Methylenediphenyl diisocyanate	Rat	9200 mg/kg	LD50 Oral	-
	Rat - Male	380 mg/m ³	LC50 Inhalation Dusts and mists	4 hours

Inhalation : Very toxic by inhalation. Irritating to respiratory system. May cause sensitization by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion : No known significant effects or critical hazards.

Skin : Irritating to skin. May cause sensitization by skin contact.

Eyes : Irritating to eyes.

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Paraffin waxes and Hydrocarbon waxes, chloro	-	2B	-	-	Possible	-
4,4'-Methylenediphenyl diisocyanate	-	3	-	-	-	-

12 . Ecological information

Environmental effects : Water polluting material. May be harmful to the environment if released in large quantities.

Aquatic ecotoxicity

Product/ingredient name	Species	Exposure	Result
Paraffin waxes and Hydrocarbon waxes, chloro	Fish	96 hours	Acute LC50 >0.1 mg/L
	Fish	96 hours	Acute LC50 0.06 to 0.08 mg/L
4,4'-Methylenediphenyl diisocyanate	Algae	72 hours	Acute IC50 1.5 mg/l

13 . Disposal considerations


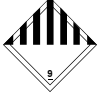
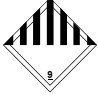
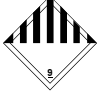
Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

AERG : 171

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Paraffin waxes and Hydrocarbon waxes, chloro).	9	III		Marine pollutant
TDG Classification	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Paraffin waxes and Hydrocarbon waxes, chloro).	9	III		Marine pollutant
IMDG Class	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Paraffin waxes and Hydrocarbon waxes, chloro).	9	III		Marine pollutant
IATA-DGR Class	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Paraffin waxes and Hydrocarbon waxes, chloro).	9	III		-

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Highly toxic material
Irritating material
Sensitizing material
Carcinogen
Target organ effects

U.S. Federal regulations : TSCA 8(a) PAIR: Methylenediphenyl diisocyanate; Diphenylmethane-4,4'-diisocyanate
United States inventory (TSCA 8b): All components are listed or exempted.
TSCA 8(d) H and S data reporting: Methylenediphenyl diisocyanate: 1990;
Diphenylmethane-4,4'-diisocyanate: 1990

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: Diphenylmethane-4,4'-diisocyanate;
Castor Oil; Paraffin waxes and Hydrocarbon waxes, chloro; Aluminum hydroxide

SARA 311/312 MSDS distribution - chemical inventory - hazard identification:

Diphenylmethane-4,4'-diisocyanate: Immediate (acute) health hazard, Delayed (chronic) health hazard;
Castor Oil: Immediate (acute) health hazard;
Paraffin waxes and Hydrocarbon waxes, chloro: Delayed (chronic) health hazard;
Aluminum hydroxide: Immediate (acute) health hazard

15 . Regulatory information

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	: Diphenylmethane-4,4'-diisocyanate	101-68-8	1 - 5
Supplier notification	: Diphenylmethane-4,4'-diisocyanate	101-68-8	1 - 5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

- State regulations**
- : **Connecticut Carcinogen Reporting:** None of the components are listed.
 - : **Connecticut Hazardous Material Survey:** None of the components are listed.
 - : **Florida substances:** None of the components are listed.
 - : **Illinois Chemical Safety Act:** None of the components are listed.
 - : **Illinois Toxic Substances Disclosure to Employee Act:** None of the components are listed.
 - : **Louisiana Reporting:** None of the components are listed.
 - : **Louisiana Spill:** None of the components are listed.
 - : **Massachusetts Spill:** None of the components are listed.
 - : **Massachusetts Substances:** The following components are listed: Diphenylmethane-4,4'-diisocyanate (MDI)
 - : **Michigan Critical Material:** None of the components are listed.
 - : **Minnesota Hazardous Substances:** None of the components are listed.
 - : **New Jersey Hazardous Substances:** The following components are listed: Diphenylmethane-4,4'-diisocyanate (MDI)
 - : **New Jersey Spill:** None of the components are listed.
 - : **New Jersey Toxic Catastrophe Prevention Act:** None of the components are listed.
 - : **New York Acutely Hazardous Substances:** The following components are listed: Methylene diphenyl diisocyanate
 - : **New York Toxic Chemical Release Reporting:** None of the components are listed.
 - : **Pennsylvania RTK Hazardous Substances:** The following components are listed: Aluminum Hydroxide; Benzene, 1,1'-methylenebis(isocyanato-
 - : **Rhode Island Hazardous Substances:** None of the components are listed.

California Prop. 65

No products were found.

Canada

- WHMIS (Canada)**
- : Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
 - : Class D-2A: Material causing other toxic effects (Very toxic).
 - : Class D-2B: Material causing other toxic effects (Toxic).



- Canadian lists**
- : **CEPA Toxic substances:** None of the components are listed.
 - : **Canadian ARET:** None of the components are listed.
 - : **Canadian NPRI:** The following components are listed: Methylenebis(phenylisocyanate)
 - : **Alberta Designated Substances:** None of the components are listed.
 - : **Ontario Designated Substances:** None of the components are listed.
 - : **Quebec Designated Substances:** None of the components are listed.

- Canada inventory** : **Canada inventory:** All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

15 . Regulatory information

International regulations

International lists : This product, (and its ingredients) is (are) listed on national inventories, or is (are) exempted from being listed, in Australia (AICS), in Europe (EINECS/ELINCS), in Korea (TCCL), in Japan (METI), in the Philippines (RA6969).

16 . Other information

Label requirements : MAY BE FATAL IF INHALED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

Hazardous Material Information System (U.S.A.) :

HAZARD RATINGS

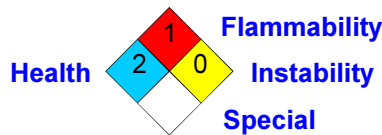
Health	*	2
Fire hazard		1
Physical Hazard		0
Personal protection		G

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal

See section 8 for more detailed information on personal protection.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) :



References : ANSI Z400.5, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005.

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Version : 1

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor 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.