



Material Safety Data Sheet

Polyisocyanurate Foam Insulation

MSDS #: 3012

1. Product and company identification

Hazard Label CAUTION

Johns Manville
Roofing Systems
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Internet: <http://www.jm.com>
Email: productsafety@jm.com
Emergency phone: 1-800-424-9300 (Chemtrec, in English)

Trade name: DuraFoam™, ENRGY 3® , ENRGY 3® Foil Face, ENRGY 3® Plus, ENRGY 3® 25 PSI, ENRGY 3® AGF, Tapered ENRGY 3® , Tapered ENRGY 3® Plus, Fesco® Foam, Tapered Fesco® Foam, Nailboard™, Vented Nailboard™, ENRGY 3® 25 psi 8924, ENRGY 3® 8924, ENRGY 3® 25 PSI Foil Face, Tapered Pre-Cut Cricket, Tapered Pre-Cut Miter

2. Hazards identification

OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential acute health effects

Inhalation: May cause respiratory irritation.

Ingestion: Gastrointestinal irritation

Skin: May cause skin irritation.

Eyes: May cause eye irritation.

Carcinogenicity: Contains material which may cause cancer, based on animal data. 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: lungs, upper respiratory tract, skin, eyes

Medical conditions aggravated by over-exposure: Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Polyisocyanurate Foam	-	5 - 90
Wood Fiber Board	-	0 - 90
Foil Kraft Facing	-	0 - 30
Aluminum	7429-90-5	0 - 19.8
DuraGlass® 8824G and 8924G Mats	-	5 - 15
Continuous Filament Glass Fibers	65997-17-3	1.75 - 12
Newly developed biosoluble fine reinforcement fiber - JM designation 481	65997-17-3	0 - 7.95
Butane, 2-methyl-	78-78-4	0 - 3.15
Cyclopentane	287-92-3	0 - 3.15
Pentane	109-66-0	0 - 3.15
Formaldehyde	50-00-0	0 - 0.0011
Wood Dust	-	

Black Facer	-	10 - 50
Carbon black	1333-86-4	0 - 3.15

Due to product form, exposure to carbon black is not expected to occur. Exposure limits are given for reference only.

4. First aid measures

Eye contact: Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention if irritation occurs.

Skin contact: Wash skin thoroughly with soap and water or use recognized skin cleanser.

Inhalation: Move exposed person to fresh air. Get medical attention if symptoms occur.

Ingestion: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel.

Notes to physician: No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

Flammability of the product: No specific fire or explosion hazard.

Extinguishing media

Suitable: Use an extinguishing agent suitable for the surrounding fire.

Not suitable: None known.

Fire-fighting measures: Under the influence of high temperatures, e.g. during a fire in the warehouse, decomposition products like carbon oxide may be released due to the low content of organic compounds.

Hazardous thermal decomposition products: Decomposition products may include the following materials: carbon dioxide, carbon monoxide

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

Methods for cleaning up

Small spill: Vacuum or sweep up material and place in a designated, labeled waste container.

7. Handling and storage

Handling: Put on appropriate personal protective equipment (see section 8). Workers should wash hands and face before eating, drinking and smoking. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator.

Storage: 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.

8. Exposure controls/personal protection

Consult local authorities for acceptable exposure limits. Exposure limits

Aluminum:

NIOSH REL(1994-06-01) Time Weighted Average (TWA), 10 mg/m³ Form: total
NIOSH REL(1994-06-01) Time Weighted Average (TWA), 5 mg/m³ Form: respirable fraction
OSHA PEL 1989(1989-03-01) PEL: Permissible Exposure Level, 15 mg/m³ Form: dust
OSHA PEL 1989(1989-03-01) PEL: Permissible Exposure Level, 5 mg/m³ Form: respirable fraction
OSHA PEL 1989(1989-03-01) PEL: Permissible Exposure Level, 5 mg/m³ Form: PYRO
OSHA PEL 1989(1989-03-01) Notes: As determined from breathing-zone air samples PEL:
Permissible Exposure Level, 5 mg/m³ Form: WELD_FUM
OSHA PEL(1993-06-30) PEL: Permissible Exposure Level, 15 mg/m³ Form: total dust
OSHA PEL(1993-06-30) PEL: Permissible Exposure Level, 5 mg/m³ Form: respirable fraction
ACGIH TLV(1994-09-01) TLV-TWA: Threshold Limit Value - Time weighted average PEL: Permissible
Exposure Level, 5 mg/m³
ACGIH TLV(1994-09-01) TLV-TWA: Threshold Limit Value - Time weighted average PEL: Permissible
Exposure Level, 10 mg/m³ Form: dust
ACGIH TLV(1994-09-01) TLV-TWA: Threshold Limit Value - Time weighted average PEL: Permissible
Exposure Level, 5 mg/m³ Form: fume

Butane, 2-methyl-:

ACGIH TLV(1998-09-01) Notes: 1998 Adoption. TLV-TWA: Threshold Limit Value - Time weighted
average PEL: Permissible Exposure Level, 600 ppm

Cyclopentane:

ACGIH TLV(1994-09-01) TLV-TWA: Threshold Limit Value - Time weighted average PEL: Permissible
Exposure Level, 1,720 mg/m³, 600 ppm
NIOSH REL(1994-06-01) Time Weighted Average (TWA), 1,720 mg/m³, 600 ppm
OSHA PEL 1989(1989-03-01) PEL: Permissible Exposure Level, 1,720 mg/m³, 600 ppm

Pentane:

NIOSH REL(1994-06-01) Time Weighted Average (TWA), 350 mg/m³, 120 ppm
NIOSH REL(1994-06-01) Threshold Limit Value - Ceiling (TLV-C), 1,800 mg/m³, 610 ppm
OSHA PEL 1989(1989-03-01) PEL: Permissible Exposure Level, 1,800 mg/m³, 600 ppm
OSHA PEL 1989(1989-03-01) Short Term Exposure Limit (STEL), 2,250 mg/m³, 750 ppm
OSHA PEL(1993-06-30) PEL: Permissible Exposure Level, 2,950 mg/m³, 1,000 ppm
ACGIH TLV(1998-09-01) Notes: 1998 Adoption. TLV-TWA: Threshold Limit Value - Time weighted
average PEL: Permissible Exposure Level, 600 ppm

Wood Dust:

Exposure standard - time-weighted average (TWA): The average airborne concentration of a particular
substance when calculated over a normal eight-hour working day, for a five-day working week., 5
mg/m³

Carbon black:

ACGIH TLV(1994-09-01) Notes: The agent (mixture, or exposure circumstance) is not classifiable as
to its carcinogenicity to humans. Substance identified by other sources as a suspected or confirmed
human carcinogen. Refers to Appendix A -- Carcinogens. 1996 Adoption TLV-TWA: Threshold Limit
Value - Time weighted average PEL: Permissible Exposure Level, 3.5 mg/m³
NIOSH REL(1994-06-01) Notes: NIOSH potential occupational carcinogen See Appendix A - NIOSH
Potential Occupational Carcinogen See Appendix C - Supplemental Exposure Limits Time Weighted
Average (TWA), 3.5 mg/m³
OSHA PEL 1989(1989-03-01) PEL: Permissible Exposure Level, 3.5 mg/m³
OSHA PEL(1993-06-30) PEL: Permissible Exposure Level, 3.5 mg/m³
NIOSH REL(1994-06-01) Notes: NIOSH potential occupational carcinogen Carbon black in presence
of polycyclic aromatic hydrocarbons (PAHs) See Appendix A - NIOSH Potential Occupational
Carcinogen See Appendix C - Supplemental Exposure Limits Time Weighted Average (TWA)

The Occupational Safety and Health Administration (OSHA) has not adopted specific occupational
exposure standards for fiber glass. Fiber glass is treated as a nuisance dust and is regulated by
OSHA as a particulate not otherwise regulated (total dust) shown in CFR 1910.1000 Table Z-
3. Respirable fraction 5 mg/m³Total dust 15 mg/m³

JM has adopted the fiber glass industry voluntary Product Stewardship Program (PSP), formerly the NAIMA-OSHA Health and Safety Partnership Program (HSPP). Under the PSP, JM recommends that exposures be limited to the voluntary concentration of 1 f/cc TWA for fibers longer than 5 microns with a diameter less than 3 microns. This will help minimize potential irritation effects. The PSP also includes the PPE recommendations described below.

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.

Personal protection

Respiratory: Use appropriate respiratory protection if there is a risk of exceeding any exposure limits. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands: Gloves (protection against mechanical abrasion)

Eyes: safety glasses with side-shields

Skin: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

9. Physical and chemical properties

Physical state: solid

Flash point: Not applicable. ()

Color: yellow., Tan.

Odor: practically odorless

Specific gravity: 0.03

10. Stability and reactivity

Stability: The product is stable.

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

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

11. Toxicological information

Acute toxicity

Butane, 2-methyl-:	LC50 inhalation Mouse: 150 mg/l, 2 h LC50 inhalation Rat: 280 mg/l, 4 h
Cyclopentane:	LD50 Oral Rat: 11,400 mg/kg LD50 Oral Mouse: 12,800 mg/kg
Pentane:	LD50 Oral Rat: > 2,000 mg/kg LC50 inhalation Rat: 364 mg/l, 4 h LD50 Other Mouse: 446 mg/kg
Formaldehyde:	LD50 Oral Rat: 100 mg/kg LD50 Oral Mouse: 42 mg/kg LD50 Oral Mouse: 385 mg/kg LD50 Oral Mouse: 500 mg/kg LD50 Oral Rat: 500 mg/kg LC50 inhalation Mouse: 0.454 mg/l, 4 h LC50 inhalation Mouse: 0.505 mg/l, 2 h LC50 inhalation Rat: 0.578 mg/l, 2 h LC50 inhalation Rat: 250 ppm, 2 h

LC50 inhalation Rat: 815 ppm, 0.5 h
 LC50 inhalation Rat: 250 ppm, 4 h
 LD50 Dermal Rabbit: 270 mg/kg
 LD50 Other Rat: 420 mg/kg
 LD50 Other Mouse: 300 mg/kg
 LD50 Other Mouse: 300 mg/kg
 LD50 Other Rat: 87 mg/kg
 LD50 Other Rat: 420 mg/kg

Carbon black: LD50 Oral Rat: > 15,400 mg/kg
 LD50 Dermal Rabbit: > 3,000 mg/kg

Classification

Product/ingredient name	ACGIH	IARC	NIOSH	NTP	OSHA
Continuous Filament Glass Fibers	A4	3			
Formaldehyde	A2	1	+		+
Wood Dust		1		k	
Carbon black	A4	2B	+		

ACGIH-A4-Not classifiable as a human carcinogen
 ACGIH-A2-Suspected human carcinogen
 ACGIH-A4-Not classifiable as a human carcinogen
 IARC Group 3, not classifiable as to carcinogenicity to humans
 IARC Group 1, carcinogenic to humans
 IARC Group 2B, possibly carcinogenic to humans
 +: NIOSH potential occupational carcinogen

Polyisocyanurate Foam: There is no evidence that dust from this material causes disease in man. There are no known animal studies of the chronic health effects of breathing dust from polyisocyanurate foam. However, a subchronic inhalation study showed no adverse respiratory effects in rats as a result of breathing 9 mg/m³ of dust from a similar foam (polyurethane foam) for 3 months (Thyssen et al., 1978). In 1987, IARC designated polyurethane as Group 3, not classifiable as to carcinogenicity to humans (Monograph 19).

12. Ecological information

Aquatic ecotoxicity

Aluminum: 4 d LC50 Fresh water Oncorhynchus mykiss: 0.31 mg/l
 4 d LC50 Fresh water Oncorhynchus mykiss: 0.16 mg/l
 4 d LC50 Fresh water Oncorhynchus mykiss: 0.12 mg/l

Formaldehyde: 4 d LC50 Fresh water Pimephales promelas: 24.1 mg/l
 4 d LC50 Fresh water Oncorhynchus mykiss: 47.2 mg/l
 4 d LC50 Fresh water Oncorhynchus mykiss: 98 mg/l
 4 d LC50 Fresh water Lepomis macrochirus: 40 mg/l
 4 d LC50 Fresh water Oncorhynchus mykiss: 40 mg/l
 4 d LC50 Fresh water Oncorhynchus mykiss: 68.8 mg/l
 4 d LC50 Fresh water Oncorhynchus mykiss: 68.4 mg/l
 4 d LC50 Fresh water Oncorhynchus mykiss: 47.2 mg/l
 2 d EC50 Fresh water Daphnia magna: 29 mg/l
 2 d EC50 Fresh water Daphnia magna: 14 mg/l
 2 d EC50 Fresh water Daphnia magna: 14.6 mg/l

13. Disposal considerations

Waste disposal: Dispose of according to all federal, state and local applicable regulations.

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

These products are not classified as dangerous goods according to international transport regulations.

15. Regulatory information

U.S. Federal regulations

Clean Water Act (CWA) 307: The following components are listed:

Clean Water Act (CWA) 311: The following components are listed: Ammonium hydroxide ((NH₄)(OH)) Formaldehyde

Clean Air Act (CAA) 112 accidental release prevention: The following components are listed: Butane, 2-methyl- Pentane Formaldehyde

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Butane, 2-methyl-: fire hazard - flammable, combustible liquid, pyrophoric Cyclopentane: fire hazard - flammable, combustible liquid, pyrophoric Pentane: acu, fire hazard - flammable, combustible liquid, pyrophoric Aluminum: fire hazard - flammable, combustible liquid, pyrophoric, rea

SARA 311/312 Product Classification: Immediate (acute) health hazard. Delayed (chronic) health hazard.

SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Form R - Reporting requirements	: Aluminum	7429-90-5	10 - 30

Supplier notification	: Aluminum	7429-90-5	10 - 30
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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

Massachusetts Substances: The following components are listed: Butane, 2-methyl- Aluminum Pentane Cyclopentane

New Jersey Hazardous Substances: The following components are listed: Butane, 2-methyl- Cyclopentane Pentane Aluminum

Pennsylvania RTK Hazardous Substances: The following components are listed: Butane, 2-methyl- Cyclopentane Aluminum Pentane

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
Formaldehyde	Yes.	No.	40 µg/day	No.
Carbamic acid, methyl ester	Yes.	No.	160 µg/day	No.
acrylamide	Yes.	No.	0.2 µg/day	No.

CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):

DuraGlass® 8824G and 8924G Mats1000 lbs

100 lbs
 Formaldehyde 100 lbs RQ
 100 lbs RQ

Canada

WHMIS (Classification): Not controlled under WHMIS (Canada).

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.

International regulations

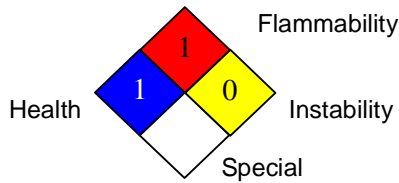
These products are considered articles under both U.S. and international products and as such, these products do not require registration or notification on the various country-specific inventories.

16. Other information

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

Health	*	1
Flammability		1
Physical hazards		0

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



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