Material Safety Data Sheet

Polyisocyanurate Foam Insulation

MSDS #: 3012

1. Product and company identification

Hazard Label CAUTION

Johns Manville
Roofing Systems
717 17th Street
Denver, CO 80202 US

Telephone: 303-978-2000 8:00AM-5:00PM M-F
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, DiamondBack® Pre-Cut Cricket, DiamondBack® Pre-Cut Miter, ENRGY 3® FR, Tapered ENRGY 3® FR, ENRGY 3® 25 PSI FR, Tapered ENRGY 3® 25 PSI FR, ENRGY 3® CGF, ENRGY 3® 25 PSI CGF, Tapered ENRGY 3® 25 PSI, Tapered ENRGY 3® AGF, Tapered ENRGY 3® CGF, Tapered ENRGY 3® 25 PSI CGF, ENRGY 3® 25 PSI AGF, Tapered ENRGY 3® 25 PSI AGF

2. Hazards identification

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

Emergency overview

Keep away from heat, sparks and flame.

Potential acute health effects

Inhalation: May cause respiratory irritation.
Ingestion: Gastrointestinal irritation
Skin: May cause skin irritation.
Eyes: May cause eye irritation.

Potential chronic health effects

Chronic effects: Contains material that can cause target organ damage.
Carcinogenicity: No known significant effects or critical hazards.
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:, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea

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

Relevant ingredients

Name	CAS number	%
Polyisocyanurate Foam	-	>=5 - <=90
Wood Fiber Board	-	>=0 - <=90
DuraGlass® 8000 Series Mats	-	>=5 - <=15
Black Facer	-	>=10 - <=50
Foil Kraft Facing	-	>=0 - <=30
Aluminum Foil Facing	-	>=1 - <=20
Coated Glass Facer	-	>=0 - <=30

Hazardous ingredients

Name	CAS number	%
Butane, 2-methyl-	78-78-4	>=5 - <10
Cyclopentane	287-92-3	>=5 - <10
Pentane	109-66-0	>=1 - <5

4. First aid measures

General information:
No action shall be taken involving any personal risk or without suitable training. If used as directed, first aid measures are generally not necessary.

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact: Wash clothing before reuse. Clean shoes thoroughly before reuse. Wash skin thoroughly with soap and water or use recognized skin cleanser. Get medical attention if symptoms occur.

Inhalation: Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.

Ingestion: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Notes to physician: No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
No action shall be taken involving any personal risk or without suitable training.

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: 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.

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

Personal precautions: No action shall be taken involving any personal risk or without suitable training. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions: Collect spillage.

Methods for cleaning up
Small spill: Vacuum or sweep up material and place in a designated, labeled waste container.Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Take up mechanically.
Large spill: Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal. Take up mechanically.

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. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. If used and stored as directed, no special protective equipment is necessary.

Storage: Store in accordance with local regulations. Keep away from sources of ignition. Observe label precautions.

Storage Stability: The product is stable.

8. Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.Exposure limits
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
ACGIH TLV(1998-09-01) Notes: 1998 Adoption. TLV-TWA: Threshold Limit Value - Time weighted average PEL: Permissible Exposure Level, 600 ppm

As a member of NAIMA, JM subscribes to the NAIMA Product Stewardship Program (NPSP). Under the NPSP, JM recommends that exposures be limited to the voluntary concentration of 1 f/cc TWA. The NPSP also includes work practice and respiratory protection recommendations. For more information, see: <(><<)>http://www.naima.org/insulation-knowledge-base/health-and-safety-aspects/product-stewardship-program-for-worker-protection.html>.

Engineering measures: No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure 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

Respiratory: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. 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: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eyes: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
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

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

Conditions to avoid: No specific data.

Substances to avoid: No specific data.

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

Conclusion/Summary: 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).

Conclusion/Summary: 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).

Classification

Product/ingredient	ACGIH	IARC	NIOSH	NTP	OSHA	

name						

Polyisocyanurate Foam: There is no evidence that dust from this material causes disease in man. There are no known animal studies ofthe 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).**Assessment carcinogenicity:** No known significant effects or critical hazards.

Assessment mutagenicity: No known significant effects or critical hazards.

Assessment teratogenicity: No known significant effects or critical hazards.

Assessment toxicity to reproduction: No known significant effects or critical hazards.

Assessment Development Effect: No known significant effects or critical hazards.

12.Ecological information

Environmental fate: No known significant effects or critical hazards.

13. Disposal considerations

Waste disposal: The generation of waste should be avoided or minimized wherever possible. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

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.

IATA & IMDG: Contact JM Product Stewardship for classification and label.

15.Regulatory information

U.S. Federal regulations

United States - EPA Clean water act (CWA) section 307 - Priority pollutants: Not listed
United States - EPA Clean water act (CWA) section 311 - Hazardous substances: Listed Formaldehyde
Clean Air Act (CAA) 112 accidental release prevention: The following components are listed: Butane, 2-methyl- Pentane Formaldehyde
United States - EPA Clean air act (CAA) section 112 - Accidental release prevention - Flammable substances: Listed Pentane Butane, 2-methyl-
United States - EPA Clean air act (CAA) section 112 - Accidental release prevention - Toxic substances: Not listed
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: Del, Fire hazard - flammable, combustible liquid, pyrophoric
SARA 311/312 Product Classification: Delayed (chronic) health hazard.

State regulations
Massachusetts Substances: The following components are listed: Pentane Cyclopentane Butane, 2-methyl-
New Jersey Hazardous Substances: The following components are listed: Pentane Cyclopentane Butane, 2-methyl-
Pennsylvania RTK Hazardous Substances: The following components are listed: Pentane Cyclopentane Butane, 2-methyl-

California Prop. 65
WARNING: This product contains less than 0.1% of a chemical known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Formaldehyde	Yes.	No.	40 µg/day	No.

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.

DSL: Not determined.

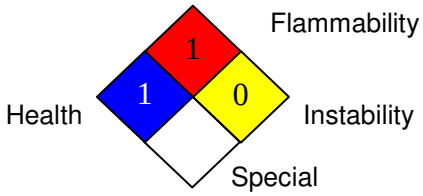
International regulations
These products are considered articles under both U.S. and international products and as such, these products do not require registration or notification on the various country-specific inventories.

16.Other information

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

Health	*	1
Flammability		1
Physical hazards		0

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



Date of issue : 11/16/2012
Date of previous issue : 04/09/2012
Version : 1.11

Johns Manville
Roofing Systems
717 17th Street
Denver, CO 80202 US

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.