Section 1 - Product and Company Identification

Hazard Label CAUTION label

Company Information

Johns Manville
Roofing Systems
P.O. Box 5108
Denver, CO 80127 USA

Telephone: 303-978-2000 8:00AM-5:00PM M-F
Internet Address: http://www.jm.com
Emergency: 800-424-9300 (Chemtrec, In English)

Trade Names:

DynaBase® PR;
DynaBase® XT;
DynaBase®;
DynaClad® Copper;
DynaClad®;
DynaFlex® CR;
DynaFlex®;
DynaGlas® 30 FR;
DynaGlas® FR CR;
DynaGlas® FR;
DynaGlas®;
DynaKap® FR CR;
GlasKap®;
DynaKap® FR;
DynaKap®;
DynaLastic® 180 FR CR;
DynaLastic® 180 FR;
DynaLastic® 180 S;
DynaLastic® 180;
DynaLastic® 250 FR CR;
DynaLastic® 250 FR;
DynaLastic® 250 S;
DynaLastic® 250;
DynaMax® FR HW;
DynaMax® FR Plus;
DynaMax® FR S HW;
DynaMax® FR;
DynaMax® S;
DynaMax®;
DynaMop® GL;
DynaMop® PR;
DynaPly®;
DynaWeld® 180 FR;
DynaWeld® 180 S;
DynaWeld® 250 S;
DynaWeld® Base;
DynaWeld® Cap 180 FR CR;
DynaWeld® Cap 180;
DynaWeld® Cap 250 FR CR;
DynaWeld® Cap 250 FR;
DynaWeld® Cap 250;
DynaWeld® Cap FR CR;
DynaWeld® Cap FR;
DynaWeld® GL;
DynaWeld® PR;
GlasBase® Plus;
GlasKap® CR;
GlasKap® Plus

Use: These products are designed for use in roofing systems where two or more plies of modified bitumen are desired.

Section 2 - Hazards Identification

Emergency Overview

Under normal conditions of use and handling, this product is not expected to create any health or safety hazards.

Inhalation

Not expected under normal conditions of use. However, irritation of the upper respiratory tract (scratchy throat), coughing, and congestion may occur in extreme exposures.

Skin

Not expected under normal conditions of use.

Ingestion

This product is not intended to be ingested (eaten). If ingested, it may cause temporary irritation to the gastrointestinal (digestive) tract.

Eyes

Not expected under normal conditions of use.

Section 3 - Composition/Information on Ingredients

CAS #	Component	Percent
8052-42-4	Asphalt	20-70
13463-67-7	Titanium dioxide (Ingredient of CR products only)	2-10
21645-51-2	Aluminum trihydrate (Ingredient of CR products only)	2-10
Not Available	Mineral granules (Ceramic-coated granite; 35% crystalline silica, non-respirable)	0-35
1317-65-3	Calcium carbonate	0-35
12007-56-6	Calcium borate (Colemanite) (Products with FR suffix contain colemanite for fire resistance)	0-35
16389-88-1	Dolomite (CaMg(CO3)2)	0-35
9003-55-8	Styrene-Butadiene polymer	4-10
25038-59-9	Polyester fiber	2-10
Not Available	Glass fiber mat	2-10
Not Available	Continuous filament glass fiber	2-10
Not Available	Glass fiber mat with polyester scrim	2-10
Not Available	Polyester mat	2-10

Not Available	Polyester mat with glass scrim	2-10
14808-60-7	Crystalline silica (sand) (adhered to product and is >99.9% too large to become airborne or to be respirable)	0-10
7429-90-5	Aluminum foil (DynaClad® has an aluminum foil surface)	4.4
9002-88-4	Polypropylene or Polyolefin Film	0-6
64742-11-6	Extracts, petroleum, heavy naphthenic	>1
64741-53-3	Distillates, petroleum, heavy naphthenic	>1
7705-08-0	Ferric chloride	>1

Component Information

Occupational exposure to titanium dioxide is not expected to occur due to product form and intended use. Exposure limit is given for reference only.

General Product Description

These products consist of a modified bitumen sheet incorporating the features of a fiber glass mat and/or polyester composite mat with a blend of SBS (Styrene-Butadiene-Styrene) rubber and high quality asphalt. Product may also contain fire retardant additives.

DynaClad™ is aluminum foil surfaced.

DynaClad™ Copper is copper surfaced.

GlasKap® products are mineral surfaced, asphalt coated, fiber glass cap sheets for use in built-up roofing systems.

Section 4 - First Aid Measures

First Aid: Inhalation

Remove to fresh air. If symptoms persist contact a physician.

First Aid: Skin

Wash exposed skin with soap and water. If irritation develops or persists, seek medical attention.

First Aid: Ingestion

Product is not intended to be ingested or eaten. If this product is ingested, do not induce vomiting and seek medical attention immediately.

First Aid: Eyes

Flush eyes with large amounts of water until irritation subsides. If irritation persists, seek medical attention.

Section 5 - Fire Fighting Measures

Flash Point: Not applicable
Method Used: Not applicable
Upper Flammable Limit (UFL): Not determined
Lower Flammable Limit (LFL): Not determined
Auto Ignition: 460ºC/860ºF
Flammability Classification: Not determined
Rate of Burning: Not determined

General Fire Hazards

There is no potential for spontaneous fire or explosion.

Extinguishing Media

Carbon dioxide (CO_2), dry chemical.

Fire Fighting Equipment/Instructions

No special procedures are expected to be necessary for this product. Normal fire fighting procedures should be followed to avoid inhalation of smoke and gases.

Section 6 - Accidental Release Measures

Clean-Up Procedures

Pick up large pieces. Vacuum dusts.

Section 7 - Handling and Storage

Handling Procedures

Use protective equipment as described in Section 8 of this safety data sheet when handling uncontained material. Handle in accordance with good industrial hygiene and safety practices.

Storage Procedures

Warehouse storage should be in accordance with package directions, if any. Material should be kept clean, dry, and in original packaging.

Section 8 - Exposure Controls / Personal Protection

Exposure Guidelines

A: General Product Information

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/m3
Total 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.

B: Component Exposure Limits

Asphalt (8052-42-4)

ACGIH: 0.5 mg/m3 TWA (fume, inhalable fraction, as benzene soluble aerosol)

Titanium dioxide (Ingredient of CR products only) (13463-67-7)

OSHA: 15 mg/m3 TWA (total dust)
10 mg/m3 TWA (total dust)
ACGIH: 10 mg/m3 TWA

Calcium carbonate (1317-65-3)

OSHA: 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

Crystalline silica (sand) (adhered to product and is >99.9% too large to become airborne or to be respirable) (14808-60-7)

OSHA: 0.1 mg/m3 TWA (respirable dust)
((250)/(%SiO2 + 5) mppcf TWA (respirable)); ((10)/(%SiO2 + 2) mg/m3 TWA (respirable));
((30)/(%SiO2 + 2) mg/m3 TWA (total dust))
ACGIH: 0.025 mg/m3 TWA (respirable fraction)

Aluminum foil (DynaClad® has an aluminum foil surface) (7429-90-5)

OSHA: 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
ACGIH: 1 mg/m3 TWA (respirable fraction)

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Safety glasses with side shields or chemical goggles are recommended.

Personal Protective Equipment: Skin

Leather or cotton gloves should be worn to protect against mechanical abrasion.

Personal Protective Equipment: Respiratory

None required

Personal Protective Equipment: General

Protective equipment should be provided as necessary to prevent irritation of the throat, eyes, and skin, and to keep exposures below the applicable exposure limits identified in Section 8.

Section 9 - Physical & Chemical Properties

Appearance:	Dark mat with granule or white coated surface	**Odor:**	Asphalt odor
Physical State:	solid	**pH:**	Not applicable
Vapor Pressure:	Not applicable	**Vapor Density:**	Not applicable
Boiling Point:	>370ºC/>700ºF	**Melting Point:**	>95ºC/>200ºF
Solubility (H_2O):	Nil	**Specific Gravity:**	Variable
Freezing Point:	Not determined	**Evaporation Rate:**	Not applicable
Viscosity:	Not applicable	**Percent Volatile:**	0
VOC:	Not Determined		

Section 10 - Stability & Reactivity Information

Stability

These products are not reactive.

Hazardous Decomposition

May form carbon dioxide and carbon monoxide.

Hazardous Polymerization

Will not occur.

Section 11 - Toxicological Information

Acute Toxicity

A: General Product Information

Vapors from this product may cause eye, respiratory and skin irritation,

B: Component Analysis - LD50/LC50

Asphalt (8052-42-4)
Oral LD50 Rat: >5000 mg/kg; Dermal LD50 Rabbit:>2000 mg/kg

Titanium dioxide (Ingredient of CR products only) (13463-67-7)
Oral LD50 Rat: >10000 mg/kg

Aluminum trihydrate (Ingredient of CR products only) (21645-51-2)
Oral LD50 Rat: >5000 mg/kg

Calcium borate (Colemanite) (Products with FR suffix contain colemanite for fire resistance) (12007-56-6)
Oral LD50 Rat: 5600 mg/kg

Crystalline silica (sand) (adhered to product and is >99.9% too large to become airborne or to be respirable) (14808-60-7)
Oral LD50 Rat: 500 mg/kg

Polypropylene or Polyolefin Film (9002-88-4)
Inhalation LC50 Mouse: 12 g/m3/30M

Ferric chloride (7705-08-0)
Oral LD50 Rat: 316 mg/kg

Distillates, petroleum, heavy naphthenic (64741-53-3)
Oral LD50 Rat: >5000 mg/kg; Dermal LD50 Rabbit:>2000 mg/kg

Extracts, petroleum, heavy naphthenic (64742-11-6)
Oral LD50 Rat: >5000 mg/kg; Dermal LD50 Rabbit:>2000 mg/kg

Component Carcinogenicity

Asphalt (8052-42-4)

ACGIH: A4 - Not Classifiable as a Human Carcinogen (fume, coal tar-free)
IARC: Group 3 - Not Classifiable (IARC Supplement 7 [1987], Monograph 35 [1985] (steam-refined cracking-residue and air-refined))

Titanium dioxide (Ingredient of CR products only) (13463-67-7)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Group 2B - Possibly Carcinogenic to Humans (IARC Monograph 93 [in preparation], Monograph 47 [1989])

Styrene-Butadiene polymer (9003-55-8)

IARC: Group 3 - Not Classifiable (IARC Supplement 7 [1987], Monograph 19 [1979])

Continuous filament glass fiber (Not Available)

ACGIH: A4 - Not Classifiable as a Human Carcinogen (listed under Synthetic Vitreous Fibers)
IARC: Group 3 - Not Classifiable (IARC Monograph 81 [2002] (listed under Man-made mineral fibres), Monograph 43 [1988]))

Crystalline silica (sand) (adhered to product and is >99.9% too large to become airborne or to be respirable) (14808-60-7)

ACGIH: A2 - Suspected Human Carcinogen
NTP: Known Human Carcinogen (Select Carcinogen)
IARC: Group 1 - Known Human Carcinogen (IARC Monograph 68 [1997] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources))

Aluminum foil (DynaClad® has an aluminum foil surface) (7429-90-5)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

Polypropylene or Polyolefin Film (9002-88-4)

IARC: Group 3 - Not Classifiable (IARC Supplement 7 [1987], Monograph 19 [1979])

Chronic Toxicity

Asphalt (asphalt CAS # 8052-42-4 and oxidized asphalt 64742-93-4; bitumens): In 1985/87, IARC (International Agency for Research on Cancer) concluded the following: (a) Bitumens are not classifiable as to their carcinogenicity to humans (Group 3). (b) Extracts of steam- and air-refined bitumens are possibly carcinogenic to humans (Group 2B). IARC found that evidence for carcinogenicity from animal studies was: inadequate for undiluted air-refined bitumens; limited for steam-refined and cracking-residue bitumens; sufficient for extracts of steam-refined and air-refined bitumen. IARC found that human evidence for carcinogenicity of asphalt fumes was inadequate. Studies of roofers indicated an excess of cancers; however, IARC concluded that, since roofers may be exposed also to coal-tar pitches and other materials, "the excess cancer risk cannot be attributed specifically to bitumens." In 1994, a published review of 20 epidemiology studies of asphalt workers and roofers agreed with IARC, that current human evidence is inadequate for the carcinogenicity of asphalt fumes in humans. Trace amounts of polynuclear aromatic hydrocarbons (PAHs) may be present in some asphalts and can be released upon excessive heating, which results in thermal cracking of the asphalt compounds. Some of these PAHs have been identified as having the potential to induce carcinogenic and reproductive health effects.

Continuous Filament Glass Fiber: No chronic health effects are known to be associated with exposure to continuous filament fiber glass. Results from epidemiologic studies have not shown any increases in respiratory disease or cancer. The International Agency for Research on Cancer (IARC) has classified continuous filament fiber glass as a Group 3 substance, not classifiable as to its carcinogenicity to humans. Because of the large diameter of continuous filament fibers, these products are not considered respirable.

Crystalline silica is considered a hazard by inhalation. The International Agency for Research on Cancer (IARC) has classified crystalline silica as a Group 1 substance, carcinogenic to humans. This classification is based on the findings of laboratory animal studies (inhalation and implantation) and epidemiology studies that were considered sufficient for carcinogenicity. Several studies have been conducted to determine the risk of cancer to workers exposed to dusts which contain crystalline silica. However, these studies did not consider other factors or elements that workers may be exposed to. Therefore, the causes of the excess deaths due to cancer could not be precisely determined. Further studies are being conducted to determine the risk of cancer when working with crystalline silica products. Excessive exposure to crystalline silica can cause silicosis, a non-cancerous lung disease.

Section 12 - Ecological Information

Ecotoxicity

A: General Product Information

No data available for this product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Ferric chloride (7705-08-0)

96 Hr LC50 Gambusia affinis: 75.6 mg/L [static]; 96 Hr LC50 Lepomis macrochirus:20.26 mg/L [semi-static]; 96 Hr LC50 Pimephales promelas:20.95-22.56 mg/L [semi-static]
48 Hr EC50 Daphnia magna: 27.9 mg/L

Extracts, petroleum, heavy naphthenic (64742-11-6)

48 Hr EC50 Daphnia magna: 1.4 mg/L

Section 13 - Disposal Considerations

US EPA Waste Number & Descriptions

A: General Product Information

This product is not expected to be a hazardous waste when it is disposed of according to the U.S. Environmental Protection Agency (EPA) under Resource Conservation and Recovery Act (RCRA) regulations. Product characterization after use is recommended to ensure proper disposal under federal and/or state requirements.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

Section 14 - Transport Information

International Transport Regulations

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

Section 15 - Regulatory Information

US Federal Regulations

A: General Product Information

SARA 311 Status. The following SARA 311 designations apply to this product: Immediate (acute) health hazard.

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Aluminum foil (DynaClad® has an aluminum foil surface) (7429-90-5)

SARA 313: 1.0 % de minimis concentration (dust or fume only)

Ferric chloride (7705-08-0)

CERCLA: 1000 lb final RQ; 454 kg final RQ

State Regulations

A: General Product Information

The glass fibers in this product are not known to be regulated.
Other state regulations may apply. Check individual state requirements.

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): WARNING! This product contains a chemical known to the state of California to cause cancer.

Methyl Carbamate (trace) CAS# 598-55-0

Asphalt fumes may contain trace amounts of the following California Proposition 65 Listed Substances as known to the state of California to cause cancer or reproductive effects: Poly nuclear aromatic hydrocarbons (benz(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene).

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Asphalt	8052-42-4	Yes	No	Yes	Yes	Yes	Yes
Titanium dioxide (Ingredient of CR products only)	13463-67-7	No	No	Yes	Yes	Yes	Yes
Calcium carbonate	1317-65-3	No	No	Yes	Yes	Yes	Yes
Crystalline silica (sand) (adhered to product and is >99.9% too large to become airborne or to be respirable)	14808-60-7	No	No	Yes	Yes	Yes	Yes
Aluminum foil (DynaClad® has an aluminum foil surface)	7429-90-5	Yes	No	Yes	Yes	Yes	Yes
Ferric chloride	7705-08-0	Yes	No	Yes	No	Yes	Yes
Distillates, petroleum, heavy naphthenic	64741-53-3	No	No	Yes	No	No	No
Extracts, petroleum, heavy naphthenic	64742-11-6	No	No	Yes	No	No	No

TSCA Status

This product and its components are listed on the TSCA 8(b) inventory.

None of the components listed in this product are listed on the TSCA Export Notification 12(b) list.

International Regulations

A: General Product Information

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

B: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Continuous filament glass fiber	Not Available	1 % (related to Fibrous glass)
Crystalline silica (sand) (adhered to product and is >99.9% too large to become airborne or to be respirable)	14808-60-7	1 %
Aluminum foil (DynaClad® has an aluminum foil surface)	7429-90-5	1 %

WHMIS Classification

This is not a WHMIS controlled product. This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations. This SDS contains all the information required by the Controlled Products Regulations.

Section 16 - Other Information

Other Information

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Prepared by:
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The information herein is presented in good faith and believed to be accurate as of the effective date given. However, no warranty, expressed or implied, is given. It is the buyer's responsibility to ensure that its activities comply with Federal, State or provincial, and local laws.

Date	MSDS #	Reason
7/1/00	3003-1.0000	New MSDS Authoring System

4/11/01	3003-1.0100	Sect. 8, 11: Update TLV for asphalt and crystalline silica.
11/06/02	3003-1.0101	Sect. 1: Designated as Articles per TSCA/CEPA; updated trade names. Sect. 11: Revise IARC Group 3 for asphalt fumes.
07/02/03	3003-1.0102	Sect. 1: Deleted discontinued trade name, Roof Defender SBS Cap.
03/05/04	3003-1.0103	Sect. 1, added DynaBase® XT Plus and DynaMax® S (S=Smooth) to trade names. Regulatory update. Minor edits.
05/10/04	3003-1.0104	Regulatory update. Minor edits.
09/04/04	3003-1.0105	Sect. 1 addition of trade name GlasKap®; label ID update.
08/17/05	3003-1.0106	Sect. 1 addition of trade names DynaWeld 180 FR and DynaWeld 180 S.
12/15/05	3003-1.0107	Regulatory update. Minor edits to Section 8 Exposure and Section 15 WHMIS.
02/13/06	3003-1.0108	Edited polyester entries in Section 2 to clarify that it is a mat or used in a mat for RR reinforcement
03/06/06	3003-1.0109	Addition of GlasKap Energy Coat to trade names
06/29/06	3003-1.0110	Changed GlasKap® Energy Coat to GlasKap® CR. Added DynaClad Copper to list of product trade names.
05/09/08	3003-1.0111	Removed DynaBase® XT, DynaGlas 30 FR XT, DynaGlas S, and DynaGlas S XT Plus from trade names. Updated SDS to GHS format.
12/12/08	3003-1.0112	Addition of methyl carbamate to Section 15 as a Prop 65 carcinogen in the glass mats.
02/12/09	3003-1.0113	Addition of the following trade names: DynaGlas FR CR, DynaWeld Cap FR CR, DynaLastic 180 FR CR, DynaLastic 250 FR CR, DynaKap FR CR, DynaFlex CR
05/12/09	3003-1.0114	Addition of the following trade names: DynaWeld® Cap 180 FR CR and DynaWeld® Cap 250 FR CR
09/11/09	3003-1.0115	Addition of DynaMax® FR Plus to trade names.
10/26/09	3003-1.0116	Addition of DynaWeld Cap 250 FR and DynaWeld 250 S
12/02/09	3003-1.0117	Addition of DynaMax FR S HW and DynaMax FR HW to trade names

End of Sheet 3003