ADDENDUM NO. 6
TO THE CONTRACT DOCUMENTS

Greenwich School District

Roof Replacement:

North Street School

381 North Street
Greenwich, CT 06830

Board of Education Bid Number: 778-10

ISSUED: 5/24/2010

PROJECT TEAM

Architects
THE GEDDIS PARTNERSHIP
71 Old Post Road-Suite 101
P.O. Box 1020
Southport, CT 06890
Phone: (203) 256-8700
Fax: (203) 255-0004

Construction Manager
SAVIN ENGINEERING, P.C.
3 Campus Drive
Pleasantville, NY 10570
Phone: (914) 769-3200
Fax: (914) 747-6686

MEP Engineer
DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 Whitney Ave. – Suite 301
Hamden, CT 06518
Phone: (203) 239-4200
Fax: (203) 234-7376

Roofing Consultant
M.A. Caputo Associates
1008 Quinnipiac Avenue
New Haven, CT 06513
Phone: (203) 469-3216
Fax: (203)410-1814

The work shall be carried out in accordance with the following supplemental instructions and in accordance with the Contract Documents.

MISCELLANEOUS

Pre-Bid Walk Through

The sign-in sheet from the May 20, 2010 pre-bid walk-through is attached.

Substitution Request

A substitution request has been submitted to use selected products from Johns Manville.

The following documents are attached for reference:

- Johns Manville substitution request letter from Jason Conley dated May 19, 2010 (2-pages).
- Johns Manville Guarantee Ammendment letter from Rick Gustin, Manager-Guarantee Services, dated May 20, 2010 (1-page).
- Substitution Request form and product information documents (27-pages).
- Substitution review letter from Marc Caputo, RRC, LEED AP of M.A. Caputo Associates, dated May 21, 2010 (2-pages)

The attached substitution has been accepted subject to all provisions of the contract drawings and specifications, and items noted in attached M.A. Caputo Associates letter.

END OF ADDENDUM NO. 6

MEETING ATTENDANCE SIGN-IN SHEET

Owner/District: Greenwich Public Schools
Project #: 5090.06
School Name: North Street School Roof
Architect: The Geddis Partnership

Meeting Type: Pre-Bid Walk Through
Date: May 20, 2010 – 4:30 PM

#	Name (print)	Company	Phone No.	Signature
1	George Nicholaides	Marfi	718 748 9041	
2	Steve Pumphrey	Silktech	203 735 0552	
3	Rich Prendiville	Greenwood Ind.	508-865-4040	
4	Joe Rossignol	J. Antonelli Roofing	203 353-6958	
5	Erick K Dowd	L+M Company	914-937 1010	
6	WILLIE STAMOS	MASPETH ROOFING	718-639-2200	
7	Bill Balomas	Plato Construction	718 492-3875	
8	Anuj Shrestha	Sea Breeze GC Inc	718-721-9030	
9	FRANK KAVANAGH	NWA construction	914-437 7889	
10	Nikolaos Smokes	Proton Construction	718-851-2300	
11	Karsten Wall	Barrett Roofing	203 744-2780	

12	PAUL POSTOLACK	LEED	914 937-7134	
13	JACEK UGARSKI	Milcon	6317569730	
14	Martin Palacios	Lm Roofing		
15	BLEDAR BAJA	AMB CONST INC	718 449 6192	7182660752
16	DAN SKELLEY	COMMERCIAL ROOFING	860 9289199	
17	John Lantz	Siplast	315-430-0356	
18				
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M.A. CAPUTO ASSOCIATES, LLC
ROOF AND BUILDING ENVELOPE CONSULTANTS
1008 QUINNIPIAC AVENUE
NEW HAVEN, CONNECTICUT 06513
TELEPHONE 203-469-3216 E-MAIL MARCRRC @ AOL.COM FAX 203-469-6692

May 21, 2010 Send by email

Mr. Brian Snyder, AIA, LEED® AP
Senior Associate
The Geddis Partnership Architects
71 Old Post Road - Suite 101
PO Box 1020
Southport, CT 06890

RE: Manville Substitution Review
Greenwich School Bid Packages

Dear Mr. Snyder:

I have completed my review of a substitution request package prepared for Allied Restoration by Johns Manville Corporation. Allied Restoration is a bidder on the current projects.

I reviewed the following documents which are all attached to this letter:

1. A May 19, 2010 letter to Brian Snyder prepared by Jason Conley, Assoc. AIA, LEED AP, a Specifier Services Engineer for Johns Manville.

2. A May 19, 2010 Substitution Request document consisting of 27 pages of text and product pages also prepared by Jason Conley

3. A May 20, 2010 Letter to Brian Snyder prepared by Rick Gustin Johns Manville Manager of Guarantee Services. According to the language on the specimen warranty, the Johns Manville Manager of Guarantee Services has the authority to alter the provisions of the standard guarantees.

In my opinion taken together the products represent an acceptable alternative to the specified products provided that they are otherwise installed according to the project specification and drawings.

Approval of these products should not constitute approval of lesser standards for the installation of those products than is established in the Specifications for the specified products. This includes but is not limited to the specification requirements that the installation of the roofing membrane be phased between the first and second layers.

Where the Substitution Request does not provide a specific product the Bidder will need to base his or her bid on the specified product. This includes but is not limited to mineral granules for dressing bleed, copper powder for dressing bleeds and sheet metal expansion joint covers.

Cordially,

M.A, CAPUTO ASSOCIATES, LLC

Marc Caputo, RRC, LEED AP

Attachments: JM Cover Letter
JM Substitution Request
JM Guarantee Modification Letter

Johns Manville Corporation
Jason Conley
Specifier Services Engineer
717 17th Street, MS 1005
Denver, CO 80202
303.978.3545 Phone
303.978.2701 Fax
Jason.Conley@jm.com

A Berkshire Hathaway Company

The Geddes Partnership
Attn: Brian Snyder
71 Old Post Road – Suite 101
P.O. Box 1020
Southport, CT 06890

May 19, 2010

Re: Greenwich H.S., North Street School, Parkway School, Julian Curtiss School

Mr. Snyder:

Based on my conversation yesterday with Mark Caputo, project Roofing Consultant from M.A. Caputo Associates, Johns Manville is resubmitting the following Substitution Request for roofing materials on the Greenwich School District roofing projects referenced in this letter.

The proposed Johns Manville SBS system (2FID-HW) includes the following components:
SBS Mineral Surfaced Roofing:

- **DynaWeld Base** (Heat-Welded Mod. Bit. Waterproofing Vapor Barrier)
- **PermaPly 28** (Fastened Bituminous Vapor Barrier) - '**Roof C'** Wood Deck
- **ENRGY 3 Polyisocyanurate** (25 psi Roof Insulation-tapered and flat stock)
- **¼" Dens-Deck Prime Gypsum Overlay** (Manuf. By Georgia Pacific Corp.)
- **JM Urethane Insulation Adhesive** (Roof Insulation 1-Part Cold Adhesive)
- **PermaPly 28** (Asphalt coated, Fiber glass base sheet) - '**Roof C'** Wood Deck
- **DynaWeld Base** (Heat-Welded Modified Bitumen base sheet)
- **DynaWeld Cap FR (Base Bid)** (Heat-Welded Modified Bitumen fire-resistant cap sheet)
- **DynaWeld Cap FR CR (Alternate #1)** (H.W. fire-resistant cool roof cap sheet)

Roofing System Flashing:

- **DynaClad Copper** (Metal Clad Modified Bitumen Flashing Sheet)
- **DynaWeld Base** (Heat-Welded Mod. Bit. First Layer Flashing)
- **PermaPly 28** (Cold Applied Bitumen First Layer Flashing) - '**Roof C'** Wood Deck
- **PermaFlash** (Bituminous Fluid Applied Flashing System

Cold Process Adhesives - '**Roof C'** Wood Deck:

- **MBR Bonding Adhesive** (Field adhesive: 2-part solvent free)
- **MBR Flashing Cement** (Flashing adhesive: 2-part solvent free)

Bituminous Cutback Materials:

- **Concrete Primer** (Primer for porous material)
- **Bestile Industrial Roof Cement** (Mastic)

Fasteners:

- **UltraFast** (Securing Dens-Deck Prime to steel deck)
- **Structural Concrete Deck Fasteners** (Securing membrane to concrete)
- **UltraFast** (Securing base sheet to wood deck)

Metal Edge:

- **Presto-Tite** - .063mm Aluminum or 24 Ga. (.6mm) Steel Fascia System with Kynar 500 finish.

Addressing Product Performance

The performance of the Johns Manville SBS modified bitumen products is unsurpassed as the comparison charts that follow will demonstrate. With over 200,000 UL and FM approvals for the bituminous line alone, Johns Manville has tested a very broad array of systems.

Addressing Product Offering

Johns Manville is a single-source supplier that manufactures products to the highest standards in our quality controlled production facilities. The breadth and depth of the Johns Manville offering is unmatched. As the only vertically integrated bituminous membrane manufacturer that produces the reinforcement as well as the finished membrane, Johns Manville is able to control the quality of the strength of the product through the reinforcement as well as the waterproofing through the complete production of the membrane. In addition to membrane, Johns Manville manufactures insulations, cover boards, and accessory products for our high quality SBS roofing systems. We partner with vendors such as fastener suppliers who continually develop new ways to provide effective solutions. With our vast manufacturing resources and partner vendors, JM provides top-tier SBS solutions for nearly every roofing challenge – from vapor barriers to edge metal and everything in-between.

Addressing Reflective Coating

Johns Manville's reflective SBS cap sheets have a factory applied coating using an elastomeric coating. Unlike reflective granules which may become lost or metal films which may delaminate during application or over time due to foot traffic, the factory coated solution offers a solution: aesthetically pleasing, energy efficient surfacing for SBS roofing systems. The Johns Manville SBS CR solutions can be hot applied, cold applied, or welded and are easier to maintain than other manufacturers solutions by applying an additional coating if required.

Addressing Warranties

Please be advised that the above roofing system qualifies for a Johns Manville Peak Advantage NDL Twenty (20) year Roofing Systems Guarantee when installed by a Johns Manville Peak Advantage Contractor, the appropriate paperwork filed, and has been inspected and approved by a JM Field Technical Representative. This Guarantee has been amended to remove the requirement of documenting maintenance in the form of a file or log throughout the Guarantee as outlined under the first bullet in the Maintenance Program on the backside of this document. Please see attached letter.

If you should have any further questions, please do not hesitate to contact me at 303.978.3545.

Best Regards,

Jason Conley, Assoc. AIA, LEED AP
Specifier Services Engineer, Johns Manville

CC: Charlie Williams, Northeast Preferred Account Manager, Johns Manville
Jeff Hunt, Northeast Sales Agent, Johns Manville
Herb Williamson, Allied Restoration, Johns Manville Pinnacle-Summit Contractor

Johns Manville
A Berkshire Hathaway Company

Johns Manville Corporation
Richard Gustin
Manager- Guarantee Services
Roofing Systems Group
10100 W Ute Ave
Littleton, CO 80127
303 978-4001 Phone
303 978-4009 Fax
gustinr@jm.com

May 20, 2010

The Geddes Partnership
71 Old Post Road, Suite 101
Southport, CT 06890

RE: Greenwich School District

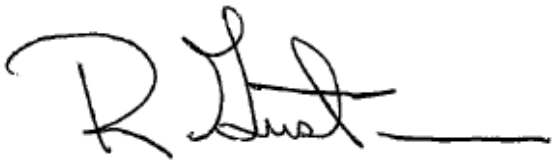
Dear Mr. Snyder,

In reference to your request about record keeping statement on Johns Manville guarantees. Johns Manville upon issue of the required guarantee will add a rider to the required guarantee stating the following:

This Guarantee has been amended to remove the requirement of documenting maintenance in the form of a file or log throughout the Guarantee as outlined under the first bullet in the Maintenance Program on the backside of this document with the stipulation that the Building Owner will be responsible for leaks due to a lack of maintenance regardless of maintenance interval or documentation.

If you have any questions, or if I can be of any further assistance, please do not hesitate to call.

Yours truly,



Rick Gustin
Manager- Guarantee Services

SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project:	Greenwich School District Greenwich H.S., North Street School, Parkway School, Julian Curtiss School	Substitution Request Number:	004 NE
		From:	Jason Conley, Assoc. AIA, LEED AP, Johns Manville
To:	The Geddes Partnership 71 Old Post Road – Suite 101 P.O. Box 1020 Southport, CT 06890	Date:	May 19, 2010
		A/E Project Number:	
Re:	SBS Membrane Roofing	Contract For:	

Specification Title:	SBS Roofing	Description:	SBS Membrane Roofing Assembly
Section:	07550	Page: 5	Article/Paragraph: 2.5

Proposed Substitution:	Membrane/Insulations/Accessories	Address:	717 17th Street, Denver, CO, 80202
Manufacturer:	Johns Manville	Phone:	303-978-3545
Trade Name:		Model No.:	

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal in all respects to specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution does not affect dimensions and functional clearances.

Submitted by:	Jason Conley
Signed by:	
Firm:	Johns Manville
Address:	717 17th Street, Denver, CO, 80202
Telephone:	303-978-3545

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

Form Version: June 2004

SUBSTITUTION REQUEST
(During the Bidding/Negotiating Stage)

Project:	Greenwich School District Greenwich H.S., North Street School, Parkway School, Julian Curtiss School	Substitution Request Number:	004 NE-02
		From:	Jason Conley, Assoc. AIA, LEED AP, Johns Manville
To:	The Geddes Partnership 71 Old Post Road – Suite 101 P.O. Box 1020 Southport, CT 06890	Date:	May 19, 2010
		A/E Project Number:	
Re:	Roof Related Sheet Metal	Contract For:	

Specification Title:	Roof Related Sheet Metal	Description:	Metal Edge and Drip Edge
Section:	07620 Page: 2	Article/Paragraph:	2.1

Proposed Substitution:	Presto-Tite Fascia System	Address:	717 17th Street, Denver, CO, 80202
Manufacturer:	Johns Manville	Phone:	303-978-3545
Trade Name:	Presto-Tite Fascia System	Model No.:	

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal in all respects to specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution does not affect dimensions and functional clearances.

Submitted by:	Jason Conley
Signed by:	
Firm:	Johns Manville
Address:	717 17th Street, Denver, CO, 80202
Telephone:	303-978-3545

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐

Form Version: June 2004

		Use				Application Method					Cool Roofing Solutions			Weight	Reinforcement					Size	LEED		Thickness	Tensile Strength @ 0°		Tear Strength		Elongation @ 0°F		Elongation @ 73°F		Low Temp. Flexibility
Manufacturer	**ASTM Standard/Product Name**	*Base*	*Cap*	*Interply*	*Flashing*	Hot Asphalt	Cold Adhesive	Torch	Self Adhered	Mechanically Attached	Reflectivity (%) (ASTM C 1549)	Emissivity (ASTM C 1371)	Solar Reflectance Index - SRI	Weight in lbs. (kgs)	Composite	Fiberglass	Polyester	Glass	Glass Grid	Size in squares (square meters)	Post Consumer Recycle	Post Industrial Recycle	mils (mm)	Machine Direction lbf/in	Cross Machine Direction lbf/in	Machine Direction lbf	Cross Machine Direction lbf	Machine Direction	Cross Machine Direction	Machine Direction	Cross Machine Direction	°Fahrenheit
	ASTM D 6163 Type I, Grade S																														
Johns Manville	DynaWeld Base							●						90 (40.8)						1 (9.3)	N/A	N/A	120 (3)	95	85	105	95	3%	3%	N/A	N/A	-10
Siplast	Paradiene 20 TG							●						76(34.5)						1 (9.3)	N/A	N/A	114 (2.9)	75	N/A	40	N/A	3%	3%	3%	3%	-13
	ASTM D 6298																														
Johns Manville	DynaClad					●	●	●			85	.085		101 (45.8)						1 (9.3)	N/A	N/A	145 (3.7)	185	175	185	185	4%	4%	N/A	N/A	5
Siplast	Veral Aluminum					●		●						96 (43.5)						1 (9.3)	N/A	N/A	150 (3.8)	180	N/A	120	N/A	4%	4%	5%	5%	0
	ASTM D 6221 Type I																														
Johns Manville	DynaFlex					●	●							82 (37.2)						0.75 (7)	N/A	N/A	160 (4)	190	150	225	200	4%	4%	N/A	N/A	-10
	ASTM D 6163 Type I, Grade G																														
Johns Manville	DynaWeld Cap FR							●			29	0.88	31	110 (49.8)						1 (9.3)	N/A	N/A	160 (4)	135	95	125	100	4%	4%	N/A	N/A	-10
Siplast	Paradiene 30 FR TG							●						84 (34.1)						.75 (7.0)	N/A	N/A	138 (3.5)	75	N/A	40	N/A	3%	3%	3%	3%	-13

JM SBS Roofing Systems - Web Tool

Note: All text in this format is an active hyperlinklink, click anywhere in the cell.

		Category or Sub Tab	Page	Link
System Introduction & Selection Tab	Browse these tabs to find information when considering a SBS system to include guarantees, codes, cool roof, etc.	Codes	Hot Applied	FM Global UL
			Cold Applied	FM Global UL
			Heat Weldable	FM Global UL
			Self-Adhered	FM Global UL
			Mechanically Fastened	FM Global UL
		JM 3-Part Specifications	Hot Applied	Steel, Concrete, LWC, Wood Decks Available
			Cold Applied	Steel, Concrete, LWC Decks Available
			Heat Weldable	Steel, Concrete, LWC Decks Available
		JM Peak Advantage® Guarantees	JM Peak Advantage Guarantee Services Page	Bituminous Systems - Charges & Requirements
System Components Tab	Browse these tabs to find all JM SBS product data sheets and MSDS.	Membrane Products	Membrane Products Master List	Hot Applied Membranes Tab Cold Applied Membranes Tab Heat Weldable Membranes Tab Self-Adhered Membranes Tab
		Insulations & Cover Boards	Insulations & Cover Boards Tab	Choose from a variety of insulation products included in the guarantee
		Fasteners & Plates	Fasteners & Plates Tab	Choose from a variety of fastening products included in the guarantee
		Accessory Products	Specialty Products Tab	Specialty Products Catalog Choose from a variety of flashing products included in guarantee
		Cements and Coatings Products	Cements & Coatings Products Tab	Choose from a range of cleaners, primers, adhesives and sealants
System Application Tab	Browse these tabs to find everything you need to know about installing a JM SBS System.	Details	Hot Applied	Select from a full set of flashing details
			Cold Applied	
			Heat Weldable	
			Self-Adhered	
		Specification Pages	Hot Applied	Select the roofing system specification needed for your next SBS project
			Cold Applied	
			Heat Weldable	
			Self-Adhered	
		Fastening Patterns	Mechanically Fastened Insulation	Includes insulation fastening as well as 6", 12" and 18" membrane fastening patterns
			Urethane Adhered Insulation	Includes insulation fastening and membrane adhesive patterns
		Installation Guide	Applies to all systems	JM SBS Installation Guide

To learn more about all JM roofing system products and services, click here.

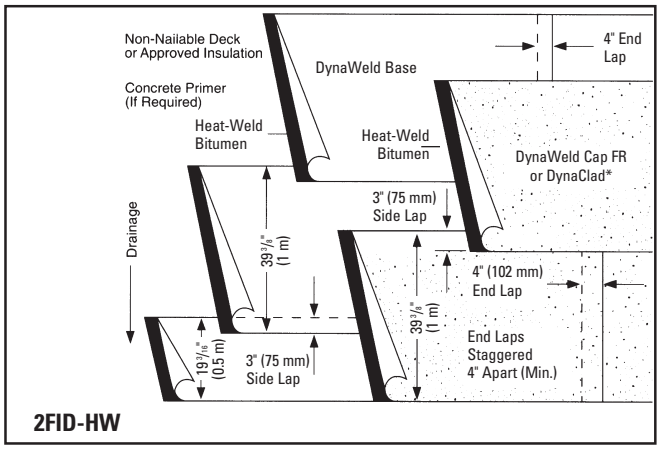
SBS Heat-Weld Specifications
Specification 2FID-HW

Two Ply Heat Welded Modified Bitumen Mineral Surfaced Roofing System. For use over Johns Manville (JM) insulation, approved decks, or other approved insulations on inclines up to 6" per foot (500 mm/m).

Materials per 100 sq. ft. (9.3 m²) of Roof Area

Primer (if required):	
JM Concrete Primer	1 gallon (3.8 liters)
Base Felts:	
DynaWeld Base	1 layer
Cap Sheet Options:	
DynaWeld Cap FR or DynaClad*	1 layer

*DynaClad cannot be used for a membrane on any roof that will have significant foot traffic.



2FID-HW

General

This specification is for use over any type of approved structural deck which is not nailable and which provides a suitable surface to receive the roof. Poured and pre-cast concrete decks require priming with JM Concrete Primer prior to application of the first heat welded modified bitumen ply. This Specification is not to be used over poured or pre-cast gypsum decks, lightweight insulating concrete decks or fills without JM insulation.

This specification is also for use over JM roof insulations, or other approved roof insulations which are not nailable and which provide a suitable surface to receive the roof. Specific written approval is required for any roof insulation that is not supplied by JM. Insulation should be installed in accordance with the appropriate JM Insulation Specification detailed in the JM Commercial/Industrial Roofing Solutions Manual. This specification can also be used in certain reroofing situations. Refer to the "Reroofing" section of the JM Commercial/Industrial Roofing Systems Manual.

For heat weld application directly to the insulation, the top layer of insulation must be JM DuraBoard™. Design and installation of the deck and/or roof substrate must result in the roof draining freely, to outlets numerous enough and so located as to remove water promptly and completely. Areas where water ponds for more than 24 hours are unacceptable and will not be eligible for a JM Roofing Systems Guarantee.

Note: All general instructions contained in the current JM Commercial/Industrial Roofing Systems Manual shall be considered part of this specification.

Flashings

Flashing details can be found in the "Bituminous Flashings" section of the JM Commercial/Industrial Roofing Systems Manual.

Application

On roof decks with slopes up to 1½" per foot (124.8 mm/m), the roofing felts and modified bitumen sheets may be installed either perpendicular or parallel to the roof incline.

Heat weld a 19¾6 (0.5 m) wide piece of one of the base plies listed. The remaining plies are to be applied full width, with 3" (75 mm) side and 4" (102 mm) end laps over the preceding sheets.

Heat weld a full width piece of one of the cap sheets listed over the installed base felt. Subsequent sheets are to be applied in the same manner, with 4" (102 mm) side laps and 4" (102 mm) end laps over the preceding sheet.

Apply all sheets so that they are firmly and uniformly set, without voids. Using a propane torch, apply the flame to the surface of the coiled portion of the roll . Torch across the full width of the roll and along the lap area. As the surface is heated, it will develop a sheen and the burn-off will disappear. The generation of smoke is an indication that the material is being overheated. Repeat the operation with subsequent rolls, maintaining proper side laps and end laps. A healthy compound flow will simplify seaming the laps. This is done by keeping the flame directed at the adhered ply and in front of the roll. At the end laps, soften the bitumen by heating the granule surface with the torch. When the granules start to sink into the bitumen, stop torching and with a hot trowel, embed the granules into the bitumen. All laps must be checked for good adhesion.

Preparation of the 4" (102 mm) lap of DynaClad requires the removal of 4" (102 mm) of metal surfacing, creating the selvedge edge. Next, apply heat to the lap that is being seamed, making sure there is a compound flow to adhere the two surfaces. All laps must be checked for good adhesion.

For special precautions for heat weld applications, see section 7A.31 of the JM Commercial/Industrial Roofing Systems Manual.

For cold weather application techniques, refer to Paragraph 7A.24 of the "Modified Bitumen Specifications" section of the JM Commercial/Industrial Roofing Systems Manual.

Surfacing

No additional surfacing is required.

Steep Slope Requirements

Special procedures are required on incline over ½" per foot (41.6 mm/m). Refer to Paragraph 7A.21 of the "Modified Bitumen Specifications" section of the JM Commercial/Industrial Roofing Systems Manual.

Refer to the Material Safety Data Sheet and Product Label prior to using this product.

PermaPly® 28

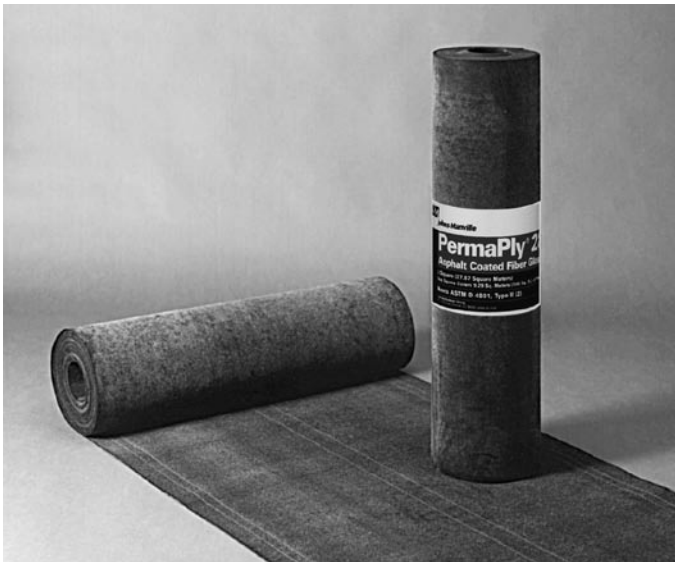
Description

Johns Manville (JM) PermaPly 28 is a lightweight, asphalt-coated, fiber glass base felt. It is manufactured by coating a JM wet process fiber glass mat with a weathering grade asphalt, and then surfaced with a fine mineral parting agent.

PermaPly 28 is well suited as a replacement for coated organic base felts, as the fiber glass (inorganic) mat reinforcement is rot resistant and has low moisture absorption.

Use

PermaPly 28 is designed for use as the first or base ply in built-up and modified bitumen roof assemblies. It is ideal for applications where mechanical attachment of the membrane to the roof substrate or roof deck is desirable. PermaPly 28's asphalt coating makes it suitable for use as an intermediate or ply felt in cold applied built-up and modified bitumen roof assemblies.



Advantages

- Easy to handle and lays fast.
- Exceptional pliability.
- Low moisture absorption, excellent dimensional stability and resistance to rot make it an ideal replacement for organic base sheets.

Typical Physical Properties

Material meets the requirements of ASTM D 4601, Type II.

Breaking Strength (min.)
Longitudinal and Transverse .... 44 lb force/in. width (7.7 kN/m)
Moisture at Time of Manufacture (max.) 1.0%
Mass of Desaturated
Glass Felt (min.) ..... 1.7 lb/100 ft^2 (83 g/m^2)
Surfacing and Stabilizer (max.) 65%
Asphalt (min.). ..... 7.0 lb/100 ft^2 (341.7 g/m^2)
Ash (Glass Mat Only) ..... 70 - 88%

PermaPly 28 has been evaluated and approved for use in a variety of fire-rated constructions and is classified by Underwriters Laboratories Inc. as a Type G-2 Coated Base Sheet and by FM Global® for use in approved FM Global constructions. Consult the current UL® Roofing Materials and Systems Directory and the FM Global Approval Guide for specific constructions.

Sizes

Roll size..... 300 ft^2 (27.87 m^2)
Roll length ..... 106' (32.31 m)
Roll width ..... 36" (914 mm)

Refer to the Material Safety Data Sheet and product label prior to using this product.

RS-2016 11-08 (Replaces 8-04)

ENRGY 3® 25 PSI

Description

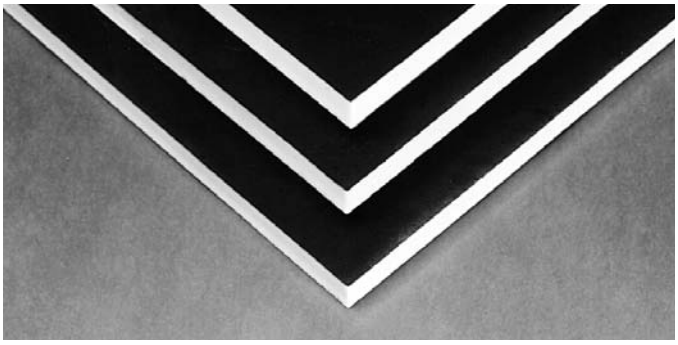
ENRGY 3 25 PSI is a rigid roof insulation board composed of a closed cell polyisocyanurate foam core bonded in the foaming process to universal fiber glass reinforced facers.

ENRGY 3 25 PSI utilizes an environmentally compliant blowing agent containing pentane hydrocarbon to enhance the thermal performance of the foam insulation. This hydrocarbon has zero ozone depletion potential and conforms to the Montreal Protocol established in 1987.

ENRGY 3 25 PSI meets the physical property requirements of ASTM C 1289, Type II, Class I, Grade 3 and CAN/ULC S704. ENRGY 3 25 PSI specialty products are also available as tapered panels, pre-cut miters and pre-cut crickets.

Use

ENRGY 3 25 PSI provides high thermal insulation value over metal, nailable, and non-nailable roof decks in built-up, modified bitumen and single ply membrane roofing systems. It may be applied using hot bitumen, cold adhesives or mechanical fasteners. The universal facer on the top and bottom side provide a suitable surface for mechanical attachment to a structural deck as well as a suitable surface to apply hot asphalt or cold adhesives.



ENRGY 3 25 PSI has been rated in Factory Mutual 1A-60 and 1A-90 fire and wind-resistant systems for BUR, modified bitumen and single ply systems in specific constructions. It has been classified by Underwriters Laboratories Inc. as an approved roof insulation in numerous Class A roof constructions and Roof/Ceiling hourly fire-rated assemblies, and is classified by Underwriters' Laboratories of Canada.

JM also supports NRCA Bulletin #9 in recommending that a cover board of Fesco Board, Fiber Glass Roof Insulation or ½" Retro-Fit Board be installed over foam insulations in hot membrane systems.

Advantages

- High thermal efficiency
- Universal facer that is compatible with BUR, modified bitumen and single ply membrane systems
- Complies with EPA, CEPA and Montreal Protocol requirements
- Meets Clean Air Act Amendments of 1990
- Third-party certification with the PIMA Quality Mark™ for Long-Term Thermal Resistance (LTTR) values.

Typical Physical Properties

	Values	Test Method
Water Absorption	<1.0% max	ASTM D 2842
Dimensional Stability Change	<2%	ASTM D 2126
Compression Resistance 10% Consolidation–psi (kPa)	25 (172) min.	ASTM D 1621
Moisture Vapor Permeance	<1 perm 57.5 ng/(Pa•s•m²)	ASTM E 96
Service Temperature	-100°F - 200°F (-73°C - 93°C)	
Tensile Strength–psf (kPa)	730 (35) nom.	ASTM D 1623

For Use over Metal Decks

The minimum thicknesses of ENRGY 3 25 PSI insulation over metal decks are as follows:

Width of Rib Opening	Up to 2⅝" (6.67 cm)	Up to 3⅜" (8.57 cm)	Up to 4⅜" (11.11 cm)
Thickness of Insulation (Minimum)	1.0" (2.54 cm)	1.2" (3.05 cm)	1.3" (3.30 cm)

Sizes

ENRGY 3 25 PSI is available in 4' x 4' (1.22 m x 1.22 m) or 4' x 8' (1.22 m x 2.44 m) boards (other sizes available by special request) and in thicknesses of 1.0" (2.54 cm) to 4.0" (10.16 cm). Some sizes are special order with minimum order quantities. Contact your JM Sales Representative for details.

Thermal Performance

Thickness (nom.) in.	mm	C-Value (Conductance) BTU/(hr•ft²•°F)	W/m²•°C	LTTR* R-Value (hr•ft²•°F)/BTU	m²•°C/W
1.0	25	0.167	0.95	6.0	1.05
1.5	38	0.111	0.63	9.0	1.59
1.6	41	0.104	0.59	9.6	1.70
1.7	43	0.098	0.55	10.3	1.81
1.8	46	0.092	0.52	10.9	1.92
2.0	51	0.082	0.47	12.1	2.14
2.3	58	0.071	0.41	14.0	2.47
2.5	64	0.063	0.37	15.3	2.69
2.7	69	0.060	0.34	16.6	2.92
3.0	76	0.054	0.31	18.5	3.26
3.2	81	0.051	0.29	19.8	3.49
3.3	84	0.049	0.28	20.4	3.60
3.4	86	0.047	0.27	21.1	3.71
3.6	91	0.045	0.25	22.4	3.94
3.8	97	0.042	0.24	23.7	4.17
4.0	102	0.040	0.23	25.0	4.40

* The Long-Term Thermal Resistance (LTTR) values were determined in accordance with CAN/ULC S770. The ultimate R-Value of these products will depend on individual installation circumstances.

Refer to the Material Safety Data Sheet and product label prior to using this product.

Tapered ENRGY 3® 25 PSI

Description

Tapered ENRGY 3 25 PSI is a rigid roof insulation board composed of a closed cell polyisocyanurate foam core bonded in the foaming process to universal fiber glass-reinforced facers. Tapered ENRGY 3 25 PSI is designed for direct application to steel and other roof decks to promote positive drainage. Tapered ENRGY 3 25 PSI meets the material requirements of ASTM C 1289, Type II, Class 1, Grade 3 and Federal Specification HH-I-1972/Gen and HH-I-1972/2. Conforms to CAN/ULC S704, Type 2, Class 2 (See CCMC Evaluation Report 13058-L). Tapered ENRGY 3 25 PSI is also available as precut miters and precut crickets.

Use

Tapered ENRGY 3 25 PSI provides high thermal insulation value over metal, nailable and non-nailable roof decks in built-up, modified bitumen and singleply membrane roofing systems. It may be applied using hot bitumen, cold adhesives or mechanical fasteners. The universal facer on the top and bottom side provides a suitable surface for mechanical attachment to a structural deck as well as a suitable surface to apply hot asphalt or cold adhesive. Tapered ENRGY 3 25 PSI is the ideal insulation for both new construction and re-roofing where ponding water or positive slope is a concern.

Tapered ENRGY 3 25 PSI has been rated in FM 1A-60 and 1A-90 fire and wind-resistant systems for BUR, modified bitumen and single ply systems in specific constructions. It has been classified by Underwriters Laboratories Inc. as an approved roof insulation in many Class A roof constructions and Roof/Ceiling hourly fire-rated assemblies. It also has been classified by Underwriters' Laboratories of Canada.

JM supports NRCA Bulletin #9 in recommending that a cover board of Fesco® Board or ½" (13 mm) Retro-Fit™ Board be installed over foam insulations in hot bituminous membrane systems.

Advantages

- High thermal efficiency
- Universal facer that is compatible with BUR, modified bitumen and single ply membrane systems
- Complies with EPA requirements
- Meets Clean Air Act Amendments of 1990

Typical Physical Properties*

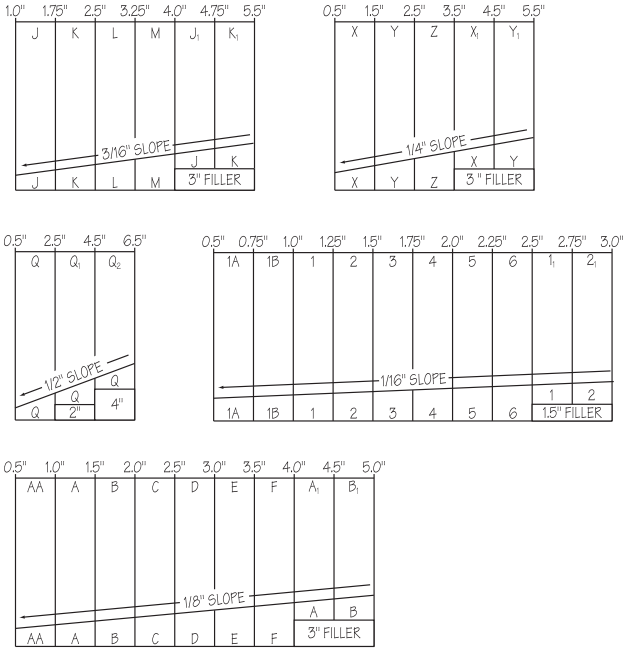
	Values	Test Method
Water Absorption, % by Volume – 2 hours	<1.0 max.	ASTM C 209
Dimensional Stability Change: 7 days @ 158°F (70°C), 90-100% RH		
Lengthwise	<2%	ASTM D 2126
Crosswise	<2%	
Compression Resistance		
10% Consolidation–psi	25 nom. (172 kPa)	ASTM D 1621
Product Density–pcf	2.0 nom. (32 kg/m³)	ASTM C 209
Moisture Vapor Transmission**	<1 perm 57.5 ng/(Pa•s•m²)	ASTM E 96
Service Temperature	-100°F - 250°F (-73°C - 121°C)	

*As measured on ENRGY 3 roof insulation.
**Foam core only.

Sizes

Tapered ENRGY 3 25 PSI is available in 4' x 4' (1.22 m x 1.22 m) panels in thicknesses of ½" (13 mm) minimum to 4" (102 mm) maximum in a single layer. Available slopes are 1/16", ⅛", 3/16", ¼" and ½" per foot (5, 10, 16, 21 and 42 mm/m).

Profiles



Refer to the Material Safety Data Sheets and product labels prior to using this product.

Urethane Insulation Adhesive

Description

Johns Manville (JM) Urethane Insulation Adhesive is a one part, cold-applied adhesive for bonding insulations to almost any conventional roofing substrate and insulation to insulation.

Use

JM Urethane Insulation Adhesive is designed for bonding all insulation board products to decks of concrete, steel, gypsum and lightweight concrete. Steel requires additional cleaning and preparation.

Advantages

- Very high strength, no mixing required.
- Fast, low applied installation cost.
- FM Global® approved.
- Eliminates mechanical fastening into concrete decks.
- Eliminates need for multiple fasteners in tapered systems.

Application

Apply adhesive in approximately ½" (13 mm) wide liquid beads poured directly from the can. The adhesive reacts quickly with moisture in the air and on the surfaces and will form a cured bond in hours. The bond is heat, water and chemical resistant.

Installation Preparation

- Apply adhesive when air and surface temperatures are 40°F (4°C) and above. Adhesive temperature must be at 70°F (21°C) or higher.
- Surfaces to be bonded together must be dry, clean and free of contaminates. Special steps are required to prepare metal. Contact JM Technical Services for restrictions and approval.
- Cans must be kept unopened until time of use.
- Before applying adhesive, insulation boards should be cut to size and ready to be installed. 4' x 4' (1.22 m x 1.22 m) boards or smaller are required.

For open spaces: At time of use, unscrew cap on cans and punch out moisture seal and attach plastic pour spouts to cans.

If an application cart is used, mount cans to cart according to instructions with cart and align plates properly. Adjust cans on cart to apply beads approximately 12" (305 mm) on center with outside beads placed 6" (152 mm) in from edge of board line.

Punch a vent hole in the up facing bottom edge of the cans with an awl. Cut spouts to needed opening size to apply a ½" (13 mm) bead at a pour pace needed for the desired installation speed. Adhesive will be thicker and pour more slowly in colder temperatures so a larger opening may be needed and the pace of installation may be slower.

Cart: Flip cans to the upside-down position and walk cart along the insulation board lay-up line, keeping outside beads along a line approximately 6" (152 mm) in from the edge of the insulation boards when they are laid in. Keep bead sizes as consistent as possible to ½" (13 mm) in width.

Hand Pour: Hand pour additional adhesive in areas where adhesive application is too light.

For corners and areas with many penetrations: Attach plastic pour spout and cut spout to desired opening size. Punch a small vent hole in can on the top surface at opposite end from spout. Hand pour adhesive from can in a pattern that fits the area with ½" (13 mm) beads 12" (305 mm) on center. Make the first bead poured a perimeter bead around all penetrations and along all edges. Then fill in remaining area. This edge bead should be 1" (25 mm) in from all board line edges.

Perimeter and corner application: To conform to FM Global wind uplift guidelines, the distance between strips of adhesive should be reduced to 7" (178 mm) o.c. in the FM Global defined perimeter areas and 4.6" (117 mm) o.c. in the FM Global defined corner areas.

Laying in insulation boards: Once adhesive beads are applied to the deck surface, insulation boards can be laid into the wet beads. Be sure additional adhesive is hand poured to even out any bead segments significantly less than ½" (13 mm). Walk insulation boards in after they are laid in place to ensure good contact with the adhesive while it is wet. High moisture level in air and deck may make it necessary to walk in boards several times as the adhesive will react and foam rapidly. Additional layers of insulation can be immediately installed over the first layer using the same procedures outlined above, except the adhesive is applied perpendicular to the preceding layer.

Storage

The ideal storage temperature is between 50°F (10°C) to 80°F (27°C).

Clean-up and Disposal

Uncured adhesive may be wiped up using acetone. Residual adhesive in empty cans will fully cure to an inert urethane film, and cans can be discarded in accordance with local disposal regulations.

Precautions

Everyone handling adhesive cans should wear protective gloves and safety glasses. All adhesives in opened containers should be used immediately.

Coverage*

Approximately 300 lin ft/gal (24.08 lin m/l) with ½" (13 mm) bead or 300 ft²/gal (7.36 m²/l) with ½" (13 mm) bead at 12" (305 mm) o.c.

* Coverage rates depend upon weather conditions and substrate. Refer to specific code agency Web sites for exact construction information.

Shelf Life

The shelf life for Urethane Insulation Adhesive is nine months from the ship date.

Refer to the Material Safety Data Sheet and product label prior to using this product.

DynaWeld™ Base

Description

DynaWeld Base is a modified bitumen sheet incorporating the features of a fiber glass mat with a blend of SBS (Styrene-Butadiene-Styrene) rubber and high-quality asphalt.

The elastometric asphalt blend has full recovery properties after 100% elongation and lends elasticity and flexibility to the sheet. The inorganic fiberglass reinforcement provides tensile strength, stability and toughness to the product, and resists moisture absorption. These properties also afford the product better resistance to the other factors which affect roof performance. The back of the sheet has a polyolefin burn-off film for ease of heat welding.

Use

DynaWeld Base is designed for use as a base or ply in multiple-ply modified bitumen roofing systems. It is ideal for low-slope applications (inclines up to 3" per foot [250 mm/m]). This product may only be installed using heat-welding application techniques.

Advantages

- The fiber glass mat provides excellent tensile strength and puncture resistance.
- The elongation and recovery properties allow the product to easily accommodate the continual expansion and contraction strains experienced on all roofs.
- The product's flexibility and dimensional stability provide ease of handling, resulting in quick installations.

Typical Physical Properties*

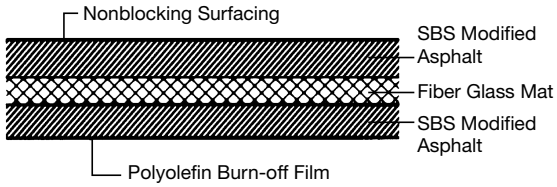
Material meets or exceeds the criteria for ASTM D 6163, Type I, Grade S.

Thickness	120 mil (3.05 mm)
Tensile Strength @ 0°F (-18°C)	
Machine Direction	95 lb force/in. width (16.63 kN/m)
Cross Machine Direction	85 lb force/in. width (14.88 kN/m)
Elongation @ 0°F (-18°C)	
Machine Direction	3.0%
Cross Machine Direction	3.0%
Tensile–Tear	
Machine Direction	105 lb/in. (18.38 kN/m)
Cross Machine Direction	95 lb/in. (16.63 kN/m)
Low Temperature Flexibility	-10°F (-23°C)
Dimensional Stability	
Machine Direction	0.20% change
Cross Machine Direction	0.20% change

* Material tested in accordance with ASTM D 5147 Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Materials.

Sizes

Roll size	100 ft² (9.29 m²)
Roll weight	84 lb (38.10 kg)
Roll length	32' 10" (10.01 m)
Roll width	39⅜" (1 m)



Refer to the Material Safety Data Sheet and product label prior to using this product.

RS-4388 5-08 (Replaces 9-06)

Johns Manville

DynaWeld™ Cap FR

Description

DynaWeld Cap FR is a fire-resistant modified bitumen sheet incorporating the features of a strong fiber glass mat with a blend of SBS (Styrene-Butadiene-Styrene) rubber, high quality asphalt and fire-retardant additives.

The elastometric asphalt blend has full recovery properties after 100% elongation and lends elasticity and flexiblilty to the sheet. The inorganic fiberglass reinforcement provides tensile strength, stability and toughness to the product and resists moisture absorption. These properties also afford the product better resistance to the other factors which affect roof performance. The covering layer of ceramic-coated roofing granules provides durability along with superior resistance to damage from weather and foot traffic. The back of the sheet has a polyolefin burn-off film for ease of heat welding.

Use

DynaWeld Cap FR is designed for use as a quality modified bitumen sheet in UL fire rated, multiple ply roofing systems. DynaWeld Cap FR unlike many modified bitumen products, enjoys UL Class A Ratings in numerous constructions, both new and reroof, without the use of additional surfacing. It is ideal for low slope applications (inclines up to 3" per foot [250 mm/m]). Because of its superior weatherability, durability, and handling characteristics, DynaWeld Cap FR may be used both for a finished cap sheet and as a flashing material. This product may only be installed using heat-welding application techniques.

Advantages

- The heavy fiber glass mat provides exceptional tensile strength and puncture resistance
- The elongation and recovery properties of the SBS blend allow the product to easily accommodate the continual expansion and contraction strains experienced on all roofs
- The product's flexibility and dimensional stability provide ease of handling, resulting in quick installations
- Fire-retardant formulation

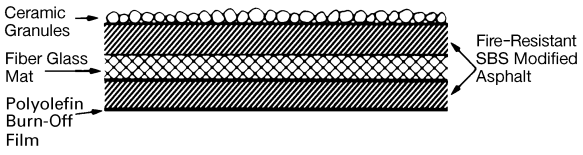
Typical Physical Properties

Material meets or exceeds the criteria for ASTM D 6163, Type I, Grade G.

Thickness	160 mils (4.0 mm)
Tensile Strength @ 0°F (-18°C)	
Machine Direction	135 lbs. force/in. width (23.6 kN/m)
Cross Machine Direction	95 lbs. force/in. width (16.6 kN/m)
Elongation @ -0°F (-18°C)	
Machine Direction	4%
Cross Machine Direction	4%
Tensile-Tear	
Machine Direction	125 lbs./in. (21.9 kN/m)
Cross Machine Direction	100 lbs./in. (17.5 kN/m)
Low Temperature Flexibility	-10°F (-23°C)
Dimensional Stability	
Machine Direction	0.20% change
Cross Machine Direction	0.20% change

Sizes

Roll size	1 square (10 m^2)
Roll weight	110 lbs. (49.8 kgs.)
Roll length	32' 10" (10 m)
Roll width	39 3/8" (1 m)



Refer to the Material Safety Data Sheet and Product Label prior to using this product.

DynaWeld™ Cap FR CR

DynaWeld Cap FR CR is a fire-resistant, modified bitumen, cool roof cap sheet incorporating the features of a strong fiber glass mat with a blend of SBS (Styrene-Butadiene-Styrene) rubber, high-quality asphalt and fire-retardant additives.

The elastomeric asphalt blend has full recovery properties after 100% elongation and lends elasticity and flexibility to the sheet. The inorganic fiber glass reinforcement provides tensile strength, stability and toughness to the product and resists moisture absorption. These properties also afford the product better resistance to other factors which affect roof performance. The covering layer of a white, acrylic coating combined with ceramic-coated roofing granules provides durability along with superior resistance to damage from weather and foot traffic, as well as the benefits of a reflective, emissive surface. The back of the sheet has a polyolefin burn-off film for ease of heat welding.

DynaWeld Cap FR CR is designed for use as a premium modified bitumen sheet in UL® fire-rated, multiple-ply roofing systems. Unlike many modified bitumen products, DynaWeld Cap FR CR enjoys UL Class A ratings in numerous constructions, both new and re-roof, without the use of additional surfacings. It is ideal for low slope applications (inclines up to 3" per foot [250 mm/m]). Because of its superior weatherability, durability and handling characteristics, DynaWeld Cap FR CR may be used both for a finished cap sheet and as a flashing material. This product may only be installed using heat-welding application techniques.

- The heavy fiber glass mat provides exceptional tensile strength and puncture resistance.
- The elongation and recovery properties of the SBS blend allow the product to easily accommodate the continual expansion and contraction strains experienced on all roofs.
- The product's flexibility and dimensional stability provide ease of handling, resulting in quick installations.
- Fire-retardant formulation.

CRRC COOL ROOF RATING COUNCIL MEMBER

	Initial	Weathered
Solar Reflectance	0.76	0.61
Thermal Emittance	0.85	0.92
Rated Product ID	0662-0007	
Licensed Manufacturer ID	0662	
Classification	Production Line	

Cool Roof Rating Council ratings are determined for a fixed set of conditions, and may not be appropriate for determining seasonal energy performance. The actual effect of solar reflectance and thermal emittance on building construction may vary.

Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating normal procedures.

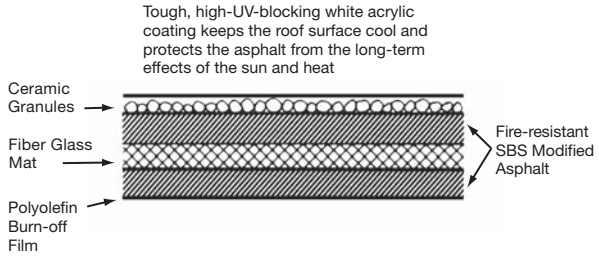
LEED®	Recycled Content: 0%	SRI 92
	Producing Locations: Oklahoma City, OK	

DynaWeld™ Cap FR CR (cont'd)

Material meets or exceeds the criteria for ASTM D 6163, Type I, Grade G.

Thickness	160 mil (4.06 mm)
Tensile Strength @ 0°F (-18°C)	
Machine Direction	135 lb force/in. width (23.6 kN/m)
Cross Machine Direction	95 lb force/in. width (16.6 kN/m)
Elongation @ -0°F (-18°C)	
Machine Direction	4%
Cross Machine Direction	4%
Tensile–Tear	
Machine Direction	125 lb/in. (21.9 kN/m)
Cross Machine Direction	100 lb/in. (17.5 kN/m)
Low Temperature Flexibility	-10°F (-23°C)
Dimensional Stability	
Machine Direction	0.20% change
Cross Machine Direction	0.20% change

Roll size	100 ft² (9.29 m²)
Roll weight	120 lb (54.43 kg)
Roll length	32' 10" (10.01 m)
Roll width	39⅜" (1 m)



Refer to the Material Safety Data Sheet and product label prior to using this product.

DynaClad® Copper

Description

Johns Manville (JM) DynaClad Copper is a copper-surfaced, elastomeric, modified bitumen membrane. It incorporates the features of a woven fiber glass reinforcement that is saturated and coated with a blend of SBS (Styrene-Butadiene-Styrene) polymer and high-quality asphalt.

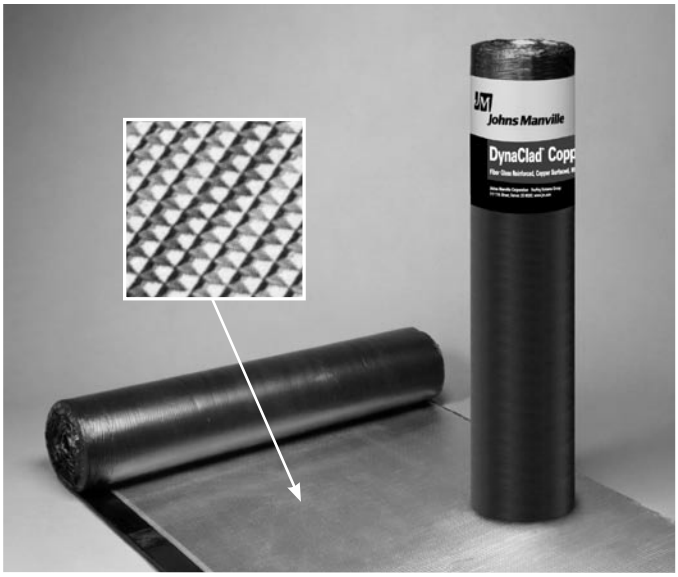
DynaClad Copper has a construction that provides an extremely durable sheet with excellent weathering properties. The covering layer of embossed copper provides durability along with superior resistance to damage from weather and foot traffic.

Use

DynaClad Copper is designed for use as a premium, modified bitumen sheet either as a cap sheet or as a flashing membrane. As a flashing material, DynaClad Copper is installed in a two-ply system over a base layer of DynaBase®. UL® Class A ratings may be obtained in numerous constructions for both new and re-roof up to unlimited slope. DynaClad Copper may only be installed using heat-welding application techniques.

Advantages

- The embossed copper surface provides high reflectivity, reducing heat load on the roof membranes and potentially lowering air conditioning energy costs.
- The woven fiber glass reinforcement mat provides good tensile properties, dimensional stability, puncture and tear resistance.



- The premium quality SBS blend allows for excellent weathering characteristics.
- The product's flexibility provides for ease of handling and quick installation.

ENERGY STAR

Typical Physical Properties*

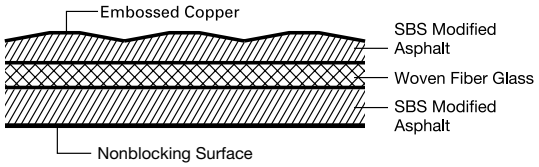
This product meets or exceeds the criteria for ASTM D 6298.

Thickness	160 mil (4.06 mm)
Tensile Strength @ 0°F (-18°C)	
Machine Direction	185 lb force/in. width (32.38 kN/m)
Cross Machine Direction	175 lb force/in. width (30.63 kN/m)
Elongation @ 0°F (-18°C)	
Machine Direction	4%
Cross Machine Direction	4%
Tensile–Tear	
Machine Direction	185 lb/in. (32.38 kN/m)
Cross Machine Direction	185 lb/in. (32.38 kN/m)
Low Temperature Flexibility	5°F (-15°C)
Dimensional Stability	
Machine Direction	0.20% change
Cross Machine Direction	0.20% change
Emissivity (ASTM E 408)	0.085
Reflectivity	74%

* Material tested in accordance with ASTM D 5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.

Sizes

Roll size	100 ft² (9.29 m²)
Roll weight	111 lb (50.35 kg)
Roll length	33' 6" (10.21 m)
Roll width	39⅜" (1 m)



Refer to the Material Safety Data Sheet and product label prior to using this product.

PermaFlash™ Primer

Description

PermaFlash Primer is an organo-silane compound dispersed in isopropyl alcohol. It improves adhesion of MBR® Flashing Cement to nonporous surfaces such as metals and some plastics. PermaFlash Primer is part of the PermaFlash integrated flashing system.

Coverage Rates*

One quart of PermaFlash Primer covers approximately 150 ft^2 (14.7 m^2/l). Do not apply material at higher coverages per square foot. Applying too much PermaFlash Primer will result in less adhesion than if the primer had not been used. When applied at the proper coverage, evaporation should occur within a few seconds.

* Coverage rates depend upon weather conditions and substrate. Refer to specific code agency Web sites for exact construction information.

Application

Substrates must be clean and dry with no oils, grease or loose debris.

Avoid contamination with water or moisture. Keep all containers tightly closed until ready for use. All equipment, air supplies and application substrates must be **absolutely dry.** Do not apply in wet weather or when rain is imminent, or when the PermaFlash Primer or substrate may become wet prior to MBR® Flashing Cement application.

Surface should be dry and 5°F (3°C) above the dew point.

Material evaporates quickly from an open container.

Mixing not required. Shake bottle before use. **Do not thin.**

PermaFlash Primer can be wiped on with a cloth rag. Or, apply light fog coat with a precision sprayer. Do not use a brush, roller, etc., because the application will be too heavy.

Isopropyl alcohol carrier will evaporate quickly on nonporous surfaces and less quickly on porous surfaces or surfaces where wicking may occur. Failure to allow complete drying and evaporation of the isopropyl alcohol carrier will result in an incomplete cure and poor adhesion to the substrate. **Allow for complete evaporation.** Surface must not appear wet or discolored before applying MBR Flashing Cement. Do not apply primer to uncured MBR Flashing Cement.

Keep substrate dry prior to coating.

Please refer to RS-4092, "PermaFlash System Installation Instructions," for further information about the application/ installation of the complete system.

Clean-up

Use soap and water for clean up.

Packaging

Packaged in 1 qt (0.95 l) containers. One PermaFlash Kit contains 2 bottles, packaged with PermaFlash Scrim.

Typical Physical Properties

Color	Clear
Flash Point (closed cup)	53°F (12°C)
Shipping Name	Isopropyl Mixture
DOT Class	Class 3, UN1219, PGII, NMFC 42680 "Limited Quantity" 173.150 49 CFR

Storage

Shelf life is two years and at a recommended storage temperature between 20°F (-7°C) and 90°F (32°C).

Refer to the Material Safety Data Sheet and product label prior to using this product.

PermaFlash™ Scrim

Description

PermaFlash Scrim is a stitchbonded polyester scrim that offers a sturdy combination of burst strength and toughness for roofing applications. The flexible polyester allows elongation of up to 50%, providing excellent accommodation to thermal stresses and movements.

PermaFlash Scrim is part of the PermaFlash System — an integrated flashing system specially formulated for use in bituminous roofing systems. The PermaFlash System also includes PermaFlash™ Primer and MBR® Flashing Cement.

PermaFlash features a unique, two-part adhesive which has tested superior to one-part adhesive cements. Reinforced with the polyester scrim, the resulting system forms an exceptionally durable elastomeric seal which bonds strongly with a variety of substrates and features extremely low permeability.

The parallel fiber structure of stitchbonded polyester allows for faster and more uniform wicking of MBR® Flashing Cement than either fiberglass or polypropylene reinforcement, and the covering of visible fabric texture is an excellent indicator that the recommended minimum thickness has been applied. The result is a monolithic liner which remains intact even under thermal shock conditions.

Unlike polypropylene fabrics that quickly deteriorate if directly exposed to UV light, PermaFlash Scrim has superior weathering resistance.

Use

PermaFlash Scrim rolls out easily with fewer wrinkles than polypropylene or spunbonded fabrics. The soft polyester fabric will also conform to embedded gravel and standing seam metal roof decks.

Sizes

Width		Length	
in.	mm	ft	m
12	305	300	91.4

Typical Physical Properties

Property	Test Method	Value
Tensile Strength	ASTM D 412	600 psi (4.1 MPa)
Elongation	ASTM D 412	> 300%
Permeability to Water Vapor	ASTM E 96 Method E, 100°F (38°C), 100 mil (2.5 mm) sheet	0.03 Perms
Working Time*	@ 75ºF (25°C)	30 Minutes
Rainproof After*	@ 75ºF (25°C)	4 Hours
Hardness	ASTM D 2240 @ 77°F (25°C)	65 Shore A
Crack Bridging	After Heat Aging	1/8" (3 mm)
Softening Point, Ring and Ball	ASTM D 36	275°F (135°C)
Elastomeric Waterproofing	ASTM C 836, ASTM C 957	Exceeds All Criteria
Abrasion Resistance	ASTM D 4060, 1,000 gr./1,000 rev. CS-17 wheel	1.2 mg loss

* Working and cure times will vary depending on ambient, surface and material temperatures.

Refer to the Material Safety Data Sheet and product label prior to using this product.

MBR® Bonding Adhesive

Johns Manville (JM) MBR Bonding Adhesive is a unique, two-component, solvent free, elastomeric, cold application adhesive, consisting of an asphalt base material and an activator.

JM MBR Bonding Adhesive is for use in applying roofing plies, modified bitumen membranes, and insulation. JM MBR Bonding Adhesive is used as a direct substitute for hot asphalt. JM MBR Bonding Adhesive is ideal for those applications where hot asphalt is prohibited, not desirable or not practical.

The adhesive will set within one hour, holding the modified bitumen or roofing insulation in place, and will cure in two to four hours into a tough, durable and highly weatherable rubber film. All modified bitumen sheet laps should be treated with the adhesive.

- 100% solids with **no volatile organic compounds (VOCs)**
- Low odor
- Fast set time
- Can be applied over wide temperature and humidity ranges.
- Fully cures regardless of thickness applied.
- FM Global® approved
- High strength with exceptional wind uplift performance
- Cures to a durable, elastomeric film and forms exceptional bonds between the modified bitumen membranes, insulations and underlying substrates.

JM MBR Bonding Adhesive is prepared on site by adding specific premeasured amounts of JM MBR Bonding Adhesive Activator and mixing for a minimum of three minutes. The adhesive is prepared in the MBR Bonding Adhesive container, a 6 gal (22.7 l) pail, with the use of an 8" (203 mm) mud mixer mounted on a ½" (13 mm) electric drill motor. The container of MBR Bonding Adhesive Activator (0.60 gal [2.3 l]) is packaged to provide exactly the correct amount of material necessary to react with the contents of MBR Bonding Adhesive Base (4.4 gal [16.7 l]), resulting in 5 gal (18.9 l) of total mixed product. The activator is heavier and has a lower viscosity than the base material. To produce a complete mix, the MBR Bonding Adhesive Activator must be poured **slowly** into the vortex caused by the rotating mixer. The activator must not be dumped into the pail in one motion. The mixer should be constantly moved about the pail in an up-and-down and side-to-side motion. **The mix is complete in 3 minutes. Do not under mix.**

The adhesive has a pot life that is dependent on the ambient temperature. The applicator will have to use the mixed material in approximately:

Temperature	(°F)	50	60	70	80	90	100
	(°C)	10	16	21	27	32	38
Minutes		55	50	45	40	35	30

The mixing of individual pails of adhesive should be timed so that one can of freshly mixed material is ready for the application crew. Mixed adhesive must not be stockpiled, since the material will cure to an unworkable viscosity before the application crew can use it.

The product can also be used as an insulation adhesive when applied in ¾" to 1" (19 mm to 25 mm) strips 12" (305 mm) apart to approved insulation. Outside strips should be approximately 6" (102 mm) from the edge of the board. The coverage rate in this application is 130 to 150 ft²/gal (3.2 to 4.9 m²/l) depending on the substrate. Contact JM Technical Services for more information.

MBR Bonding Adhesive should not be installed over cut-back primer.

MBR Bonding Adhesive can be installed with a notched squeegee or trowel. Average coverage per ply* is 50 to 70 ft²/gal (1.23 to 1.72 m²/l).

Tools and equipment can be cleaned with mineral spirits.

* Coverage rates depend upon weather conditions and substrate. Refer to specific code agency Web sites for exact construction information.

Property	Value	Test Method
Deflection Temperature Test limit of apparatus	Below -10°F (-23°C)	ASTM D 648
Extension to Break	100%	ASTM D 412
Hardness Shore A @ 77°F (25°C)	25	ASTM D 2240
Tensile Strength	250 psi (2.8 MPa)	ASTM D 412
Peel Resistance of Adhesives (T-Peel Test)		ASTM D 1876
Sanded Surface SBS*	8 pli min.	
Smooth Surface SBS**	15 pli min.	
Wood***	25 pli	
Concrete****	25 pli min.	

* Adhesive failure between sand and SBS roof membrane
** Cohesive failure – SBS Membrane
*** Cohesive Failure – MBR Bonding Adhesive
**** Cohesive Failure – MBR Bonding Adhesive

Everyone handling adhesives should wear protective gloves and safety glasses. All of the adhesive must be mixed properly and used immediately. MBR Bonding Adhesive may cause eye, skin and respiratory irritation, and is harmful or fatal if swallowed.

Refer to the Material Safety Data Sheet and product label prior to using this product.

RS-4711 4-09 (Replaces 12-08)

MBR® Flashing Cement

Description

MBR Flashing Cement is a unique, two-component, elastomeric, liquid applied flashing material, consisting of an asphalt/urethane base material and an activator. It is formulated for use with the Johns Manville (JM) SBS modified bitumen membrane products.

The two parts are MBR Flashing Cement Base and MBR Flashing Cement Activator.

MBR Flashing Cement is available in 5 gal (18.93 l) pails, 1 gal (3.79 l) cans or in 28.74 oz (850 ml) cartridges. MBR Flashing Cement cartridges do not require premixing.

MBR Flashing Cement is also used in the JM PermaFlash™ Bituminous Flashing System for penetrations and other details.

Use

When used as a direct substitute for hot asphalt, MBR Flashing Cement is ideal for those applications where hot asphalt is prohibited, not desirable or not practical.

In pails, mix the adhesive on site, apply by trowel to the substrate and lay the flashing material into the bed of adhesive. In cartridges, apply the adhesive directly; no premixing is necessary.

The adhesive will set within 20 to 40 minutes, holding the modified bitumen in place, and will cure in two to four hours into a tough, durable and highly weatherable rubber film. Treat all modified bitumen sheet laps with the adhesive.

Advantages

- Cures to a durable, elastomeric film and forms exceptional bonds between the modified bitumen and underlying substrate
- Resists virtually all factors affecting base flashing performance while providing superior flexibility and durability
- Use as a direct substitute for hot asphalt
- Ideal for areas where hot asphalt is prohibited, not desirable or not practical
- UV stable
- High solids, low odor, VOC compliant

Typical Physical Properties

Property	Test Method	Value
Tensile Strength	ASTM D 412	600 psi (4.13 MPa)
Elongation	ASTM D 412	> 300%
Permeability to Water Vapor	ASTM E 96 Method E, 100°F (38°C), 100 mil (2.5 mm) sheet	.03 perms
Working Time*	@ 75ºF (25°C)	30 min
Rainproof After*	@ 75ºF (25°C)	4 h
Hardness	ASTM D 2240 @ 77°F (25°C)	65 Shore A
Crack Bridging	After Heat Aging	⅛" (3 mm)
Softening Point, Ring and Ball	ASTM D 36	275°F (135°C)
Elastomeric Waterproofing	ASTM C 836,	Exceeds all criteria ASTM C 957
Abrasion Resistance	ASTM D 4060, 1,000 gr./1,000 rev. CS-17 wheel	1.2 mg loss

* Working and cure times will vary depending on ambient, surface and material temperatures.

Caution

JM MBR Flashing Cement products are significantly different from the adhesive materials used for built-up roofing. They require the mechanic to use a great deal more care since these adhesives are prepared on the jobsite. Roofing contractors must advise their crews to precisely follow all safety, storage, handling, preparation and application instructions. JM will not accept responsibility for any use of these products that does not comply with the instructions printed on the container.

MBR Flashing Cement Base is flammable and may cause eye, skin and respiratory irritation. Read container label and follow all safety instructions.

MBR Flashing Cement Activator vapors are harmful and will cause irritation to the respiratory system if inhaled, and may cause an allergic reaction. Read container label and follow all safety instructions.

Avoid contact with skin. Use impervious clothing and rubber gloves to avoid prolonged or repeated contact with skin. If operating conditions (spray application) create high airborne concentrations, the use of a NIOSH air-supplied respirator is required, or provide adequate ventilation. Use tight and well-sealed goggles or a face shield and safety glasses. Keep containers closed when not in use.

Refer to the Material Safety Data Sheet and product label prior to using this product.

RS-4231 11-08 (Replaces 8-07)

MBR® Flashing Cement (cont.)

Equipment

The following equipment is necessary for the safe and efficient preparation and application of MBR Flashing Cement.

Safety and Personal Hygiene Equipment
The following items should be used by every worker:

1. Impervious rubber gloves, one pair for each person.
2. Rubber or plastic apron, one for every person mixing.
3. Organic cartridge respirator, one for each person. This is necessary for a confined-space or spray application.
4. Chemical safety goggles, one for each person mixing.
5. Soap and water.
6. Hand cleaner.
7. Supply of clean rags.
8. Solvent: paint thinner or mineral spirits.
9. Portable fire extinguisher.
10. Squeeze bottle filled with clean water for use as eye wash.

These items may be required at the jobsite to protect the installation and surrounding areas during application.

1. Heavy wrapping paper or suitable protective sheeting.
2. 2" (5.08 cm) wide masking tape.

Mixing Equipment*

½" (1.27 cm) drill: 450-900 rpm

- For 5 gal (18.92 l) pails: 8" (20.32 cm) mud mixer
- For 1 gal (3.79 l) cans: 3" to 4" (7.62 cm to 10.16 cm) spiral paint mixer

For cartridges: static mixer tip and cartridge applicator.

Application Equipment*

1. Brushes or trowels.
2. Solvent: paint thinner or mineral spirits.
3. All tools normally used in the application of BUR flashing materials.

* Mechanical Equipment: Some of the items listed are optional.

Mixing

These instructions apply to MBR Flashing Cement in 5 gal (18.92 l) pails and 1 gal (3.79 l) cans.

Large Volume Mix
(1) 5 gal (18.92 l) MBR Flashing Cement Base Pail
Contents: 4 gal (15.14 l)

(1) jug MBR Flashing Cement Activator
Contents: 44.1 oz (1.30 l)

Small Volume Mix
(1) MBR Flashing Cement Base Can
Contents: 0.83 gal (3.14 l)

(1) bottle MBR Flashing Cement Activator
Contents: 0.07 gal (0.26 l)

All two-part products are color-coded products.

Adhesive Preparation: The adhesive is prepared in the MBR Flashing Cement Base 5 gal (18.92 l) pail, using the appropriate mixing equipment mentioned. MBR Flashing Cement Activator is packaged in premeasured containers with the exact amount of material necessary to react with the contents of the corresponding MBR Flashing Cement Base.

Continuously move the mixer in an up-and-down and side-to-side motion.

Do not dump the activator into the pail in one motion. To produce a complete mix, pour the MBR Flashing Cement Activator **slowly** into the vortex caused by the rotating mixer.

The mix is complete in three minutes. Do not undermix the batch. Over mixing will reduce working time.

Do not stockpile adhesive, since the material will cure to an unworkable consistency!

The pot life is dependent on the ambient temperature; extremes in temperature can shorten the pot life of the mix. The mechanic will have to use the mixed material in approximately:

Temperature	(°F)	50	60	70	80	90	100
	(°C)	10	16	21	27	32	38
Minutes		20	25	30	30	30	25

Time the mixing of individual pails of adhesive so that only one can of freshly mixed adhesive is ready for each application crew. In cold weather, store and mix the material at room temperature.

Refer to the Material Safety Data Sheet and product label prior to using this product.

MBR® Flashing Cement (cont.)

Application

On the substrate to be flashed, use a trowel to spread the mixed material to obtain a full coverage coating, without voids, to a minimum thickness of 1/16" (1.59 mm). As the coating process proceeds, lay the flashing membrane into the bed of cement. Check all flashing details to determine if there is a nailing requirement.

Seal side laps in the same manner, at a minimum of 4" (10.16 cm).

For penetrations, use MBR Flashing Cement in conjunction with PermaFlash™ Primer and PermaFlash™ Scrim.

Coverage

Approximately 4.5 mixed gal (18.93 l) of MBR Flashing Cement are required to cover 96 ft^2 (8.92 m^2) with a nominal 1/16" (1.59 mm) thick layer of adhesive.

When flashing to sheet metal, PermaFlash Primer is required and should be applied as prescribed on the primer label.

MBR Flashing Cement bonds very well to clean, dry, well-cured concrete. However, concrete cured with mineral oils, resins or waxes requires the use of JM Concrete Primer. In addition, clean and coat concrete soiled with oil, grease or release agents with JM Concrete Primer, following the instructions on the pail.

Storage and Shelf Life

Store the activator indoors in an area between 60°F (16°C) and 90°F (32°C). MBR Flashing Cement Base in 5 gal (18.92 l) pails and 1 gal (3.79 l) cans have an indefinite shelf life as long as the containers are sealed. MBR Flashing Cement Activator has a shelf life of two years. MBR Flashing Cement Cartridges (28.74 oz [850 ml] each) have a shelf life of one year.

Clean Up

Use mineral spirits to clean tools immediately after completion of work. Periodically place tools in a pail of mineral spirits to prevent buildup of cement. Wear rubber gloves during all applications and clean up procedures. Follow manufacturer's warnings and cautions about using solvents.

Disposal Information: MBR Flashing Cement, i.e., MBR Flashing Cement Base that has been fully reacted with MBR Flashing Cement Activator, can usually be disposed of at a licensed landfill.

MBR Flashing Cement Base is considered a hazardous waste. Disposal must be in accordance with local, state and federal regulations. If possible, fully react any remaining material with MBR Flashing Cement Activator; this reacted material can usually be disposed of at a licensed landfill.

MBR Flashing Cement Activator is also considered a hazardous waste. Disposal must be in accordance with local, state and federal regulations. If the material reacts with MBR Flashing Cement Base, disposal can be as recommended for MBR Flashing Cement. If this is not the case, the material can be neutralized by mixing with a 90 percent water, 8 percent ammonia and 2 percent detergent solution. Leave containers open for at least 48 hours to allow any carbon dioxide gas evolved to escape. The resulting solidified waste can then usually be disposed of at a licensed landfill.

Empty Containers: MBR Flashing Cement Base containers, when empty, contain combustible and harmful vapors and residue. Do not reuse the container or remove the labels. Follow all of the label warnings even when the container is empty. Dispose of containers in accordance with applicable regulations. If the residue is of fully reacted material, the container can usually be disposed of at a licensed landfill.

Neutralize MBR Flashing Cement Activator containers with the solution described in the disposal information above. Leave decontaminated containers open for at least 48 hours to allow any carbon dioxide gas evolved to escape. Containers can then be disposed of at a licensed landfill.

Refer to the Material Safety Data Sheet and product label prior to using this product.

Concrete Primer

Description

Concrete Primer is a thin brushing, cut-back asphalt primer.

Use

Concrete Primer is used to prime concrete roof decks, brick and other masonry used in parapets and walls to which flashings are to be applied. It prepares these surfaces to receive hot asphalt or cold asphaltic cements and ensures good adhesion.

Concrete Primer also makes an excellent primer for metal edge strips and other metal roof components which are to receive asphaltic coatings or cements.

To minimize risk: AVOID PROLONGED OR REPEATED BREATHING OF VAPOR • AVOID CONTACT WITH EYES • DO NOT TAKE INTERNALLY • USE WITH ADEQUATE VENTILATION • KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME • KEEP CONTAINER CLOSED WHEN NOT IN USE • KEEP OUT OF REACH OF CHILDREN.

Application

Apply Concrete Primer by brush, roller or spray to surfaces which have been cleaned of dirt and loose material.

Allow to dry thoroughly before proceeding with the application of the roofing system.

Concrete Primer can be used at any time of the year. In weather below 40°F (4°C), keep in a warm area (70°F [21°C]) until ready to use, to make application easier.

The Primer is ready for use right out of the container and should not be diluted.

Material meets the requirements of ASTM D 41.

Coverage*

Approximately 100 ft^2/gal (2.45 m^2/l)

* Coverage rates depend upon weather conditions and substrate. Refer to specific code agency Web sites for exact construction information.

Packaging

5 gal (18.9 l) pails and 55 gal (208.2 l) drums

Refer to the Material Safety Data Sheet and product label prior to using this product.

Bestile™ Industrial Roof Cement

Description

Bestile Industrial Roof Cement is a premium-grade mastic designed for use in the construction of professional roof flashings and details. It is a blend of selected asphalts, nonasbestos fibers, selected fillers and petroleum solvents. This is a high-quality product, supplied in a smooth, easy-working consistency. Bestile Industrial Roof Cement resists slumping yet remains plastic. Therefore, it may be used on both vertical and horizontal surfaces. It has a high resistance to weathering, and provides excellent durability against the stresses and wear to which flashing adhesives are normally exposed.

Use

Bestile Industrial Roof Cement is designed as a waterproof adhesive component for base, projection and penetration flashings in commercial/industrial roofing systems. It is also an excellent sealant for counterflashings. It is used where dissimilar materials must be joined and sealed watertight. Bestile Industrial Roof Cement may be used as a flashing adhesive on both vertical and horizontal surfaces. It may be used for repairing bituminous roof surfaces, and for waterproofing and flashing where a heavy-duty product is required. It has the necessary body, consistency and resiliency to maintain a strong, waterproof bond during varying temperatures and weather conditions.

Caution: Combustible. Bestile Industrial Roof Cement contains petroleum distillate. To minimize risks: KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME • AVOID PROLONGED CONTACT WITH SKIN • AVOID PROLONGED OR REPEATED BREATHING OF VAPORS • AVOID CONTACT WITH EYES • DO NOT TAKE INTERNALLY • USE WITH ADEQUATE VENTILATION • KEEP CONTAINER CLOSED WHEN NOT IN USE • KEEP OUT OF REACH OF CHILDREN.

Application

All surfaces must be clean and free of oil, grease, rust, scale, loose paint, dir t and debris. Porous surfaces require priming with JM Concrete Primer. Primer must be allowed to dry prior to applying Bestile Industrial Roof Cement. Bestile Industrial Roof Cement does not adhere to damp or wet surfaces. Apply with a trowel in a thickness of ⅛" (3 mm). Do not apply in thickness exceeding ¼" (6 mm). Apply cement liberally in joint areas, seams or cracks. Work the cement to a feather edge to provide a smooth transition and facilitate drainage. The cement should be reinforced with roofing felt, base flashing sheets or glass fabric. For best results in cold weather, store unopened containers in a warm area for at least 24 hours prior to application. Equipment and tools can be cleaned with kerosene or mineral spirits immediately after use. Use extreme care when handling solvents.

Coverage*

Bestile Industrial Roof Cement should be troweled onto the surface to which flashings are to be adhered in approximately ⅛" (3 mm) thick layer. Do not apply thicker than ¼" (6 mm). Coverage rate is approximately 14 ft^2/gal (0.34 m^2/l).

* Coverage rates depend upon weather conditions and substrate. Refer to specific code agency Web sites for exact construction information.

Typical Physical Properties

Material meets the requirements of ASTM D 4586, Type I.

Color	Black
Solids Content	75% - 78% by Weight
Weight	9.3 - 9.7 lb/gal (1.1 - 1.2 kg/l)
Drying Time (70°F [21°C], 50%RH)	6 hours
Shelf Life	Indefinite in airtight container
Coverage (⅛" [3 mm] thickness)	14 ft^2/gal (0.34 m^2/l)

Packaging

5 gal (18.9 l) pails or 55 gal (208.2 l) drums

Refer to the Material Safety Data Sheet and product label prior to using this product.

DynaTred™ Roof Walkway
DynaTred™ Plus Roof Walkway

Description

DynaTred and DynaTred Plus are preformed, skid-resistant boards consisting of modified asphalt, reinforcements and fillers with a ceramic granule surface on both sides. They are durable, resilient and maintenance free.

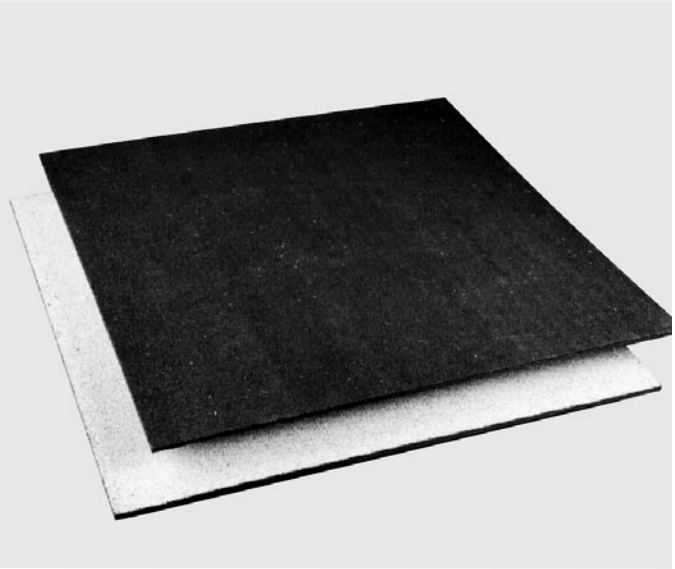
Use

DynaTred and DynaTred Plus can be installed over built-up and modified bitumen roofing systems to provide an integral, skid-resistant walkway for demanding service access needs.

Over smooth or mineral-surfaced roofs, or prior to graveling, install DynaTred and DynaTred Plus in either a full bed of hot asphalt or MBR® Utility Cement. If installed in hot asphalt, use the same asphalt recommended for use with the BUR or modified bitumen membrane. All four corners of each piece should be fully and firmly set prior to walking on the board.

Leave a minimum of 1" (2.54 cm) open space in all directions between walkway boards to provide for drainage of the roofing system.

DynaTred and DynaTred Plus are not recommended for use on slopes in excess of 2" per foot (167 mm/m).



Advantages

- Long-lasting roof protection.
- Skid-resistant surface.
- Durable, resilient and maintenance free.
- Can be easily cut with a heavy-duty utility knife or circular saw with a carbide-tipped blade.

Typical Physical Properties

Thickness	
DynaTred	5/16" (7.94 mm)
DynaTred Plus	½" (1.27 cm)
Dimensions	
Width	32" (81.28 cm) ± ¼" (6.35 mm)
Length	32" (81.28 cm) ± ¼" (6.35 mm)
Color	Black/White or White/White
Water Absorption	<0.5%

Sizes

32" x 32" (81.28 cm x 81.28 cm)

Refer to the Material Safety Data Sheet and product label prior to using this product.

Presto-Tite™ Fascia System

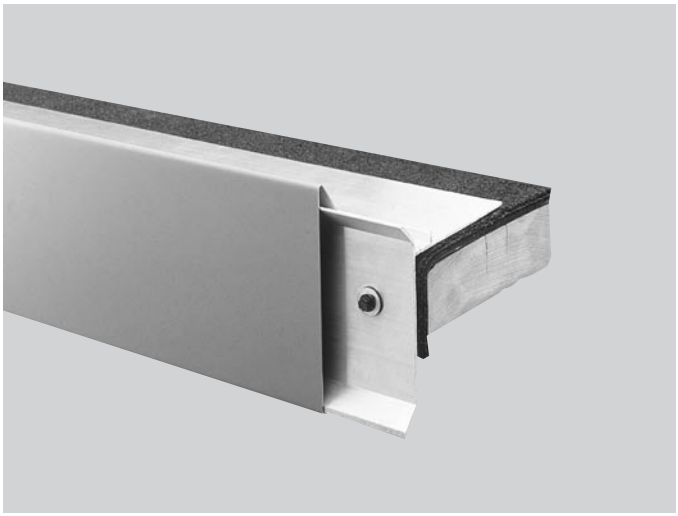
For Bituminous Roof Systems

Description

Presto-Tite is a high performance edge treatment for all your modified bitumen and BUR roof projects. It provides maximum protection against wind uplift damage.

Use

Presto-Tite edge for bituminous roof systems allows for vertical face attachment without penetrating the horizontal flange. This "nonpenetrating" design eliminates the need to strip-in the deck flange, thus eliminating potential delamination between the asphalt and metal deck flange due to thermal expansion and contraction forces.



Accessories

Factory-welded anchor corners, overflow and spillout scuppers, downspout sumps, radius and special angles, extenders and soffit clip systems are also available.

Material Specifications

Anchor Bars:
12' (3.05 m) lengths, extruded from 6063-T6 alloy aluminum, preslotted 12" (30.48 cm) o.c.

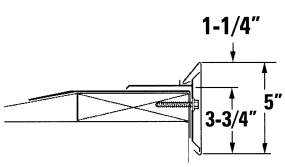
Fasteners: (Furnished)
Corrosion resistant #12 x 1⅝" (4.13 cm) fasteners with hexagonal head and driver bit furnished. Masonry fasteners available upon request.

Snap-On Fascia Cover:
12' (3.05 m) lengths available in 24 ga. (0.6 mm) steel with Kynar®* 500 and 0.040" (1.02 mm) aluminum in mill, clear or color anodized, and Kynar 500 finishes. Other metals and finishes available upon request. Fascia cover is factory "notched" to provide a 1" (2.54 cm) lap joint.

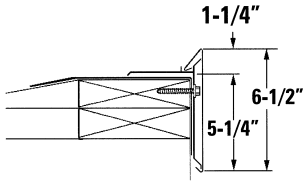
Anchor Bar Splice Plates:
0.025" (0.64 mm) mill aluminum with factory-applied closed cell compression gasket allows for thermal movement of the fascia systems.

Sizes

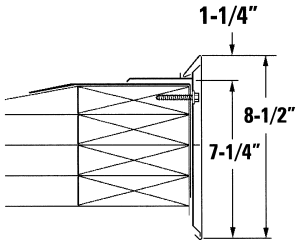
Typical Applications:



PFM-50



PFM-65



PFM-85

Refer to the Material Safety Data Sheet and product label prior to using this product.

Johns Manville

Specialty Roofing Products

Edge Metal Systems Reference Guide

	Product Name	JM Guarantee	Metals				Finish			Accessories			Certifications				
			Aluminum, 0.040" (1.02 mm)	Aluminum, 0.050" (1.27 mm)	Aluminum, 0.063" (1.60 mm)	Galvanized, (Kynar®* 500 finish only) 24 ga (0.61 mm)	Kynar 500 (28 standard colors available)	Mill Finish (aluminum only)	Clear and Colored Anodized (aluminum only)	Extender Systems	Welded Miters and Tees	Custom Miters	FM Global 1-90	FM Global 1-270	FM Global 1-645	Miami-Dade County	ANSI/SPRI ES-1
Edge Metal Systems	Presto Lock Coping System	×	×	×	×	×	×	×	×	×	×	●	×			×	×
	Presto-Tite Fascia System	×	×			×	×	×	×	×	●	●			×	×	×
	Presto-Tite Large Face	×		×	×		×	×	×		×	●		×		×	×
	Presto Lock Fascia System	×	×	×	●	×	×	×	×	×		●	×				
	Presto Stop Gravel Stop	×	×	×	●	×	×	×	×	×		●					

*Kynar is a registered trademark of Arkema, Inc.

× = Standard
● = Special Order

WATER FIRE HAIL WIND

Johns Manville

Commercial/Industrial Roofing Systems

Peak Advantage Guarantee

Building Owner

Building Name

Approved Roofing Contractor

Guarantee Number:

Date of Completion:

Terms & Maximum Monetary Obligation to Maintain a Watertight Roofing System.

Years **$** No Dollar Limit

Coverage

The components of the Roofing System covered by this Guarantee are:

Total Squares:

Membrane Spec. and Type :

Insulation Type :

Accessories (Type and Quantity) :

These Johns Manville Guaranteed components are referred to below as the "Roofing System" and ALL OTHER COMPONENTS OF THE OWNER'S BUILDING ARE EXCLUDED FROM THE TERMS OF THIS GUARANTEE.

Johns Manville* guarantees to the original Building Owner that during the Term commencing with the Date of Completion, JM will pay for the materials and labor required to promptly repair the Roofing System to return it to a watertight condition if leaks occur due to: ordinary wear and tear, or deficiencies in any or all of the component materials of the Roofing System, or workmanship deficiencies in the application of the Roofing System.

WHAT TO DO IF YOUR ROOF LEAKS
If you should have a roof leak please refer to directions on the reverse side.

LIMITATIONS AND EXCLUSIONS
This Guarantee is not a maintenance agreement or an insurance policy; therefore, routine inspections and maintenance are the Building Owner's responsibility (see reverse side of this document). Failure to follow the Maintenance Program on the reverse side of this document will void the Guarantee. This Guarantee does not obligate JM to repair the Roofing System, or any part of the Roofing System, for leaks resulting from (a) natural disasters including but not limited to the direct or indirect effect of lightning, flood, hail storm, earthquake, tornados, hurricanes or other extraordinary natural occurrences and/or wind speeds in excess of 72 miles per hour, (b) misuse, abuse or negligence, (c) installation or material failures other than those involving the component materials expressly defined above as the Roofing System or exposure of the Roofing System components to damaging substances such as oil or solvents or to damaging conditions such as vermin, (d) changes to the Roofing System or the Building's usage that are not pre-approved in writing by JM, or (e) failure of the Building substrate (mechanical, structural, or otherwise and whether resulting from Building movement, design defects or other causes) or improper drainage. JM is not responsible for leaks and damage resulting from water entry from any portion of the Building structure not a part of the Roofing System.

This Guarantee becomes effective when (1) it is delivered to Owner: and (2) all bills for installation, materials, and services have been paid in full to the Approved Roofing contractor and to JM. Until that time, this Guarantee is not in force and has no effect.

The Parties agree that any controversy or claims relating to this Guarantee shall be first submitted to mediation under the Construction Industry Arbitration and Mediation Rules of the American Arbitration Association (Regular Track Procedures) or to such other mediation arrangement as the parties mutually agree. No court or other tribunal shall have jurisdiction until the mediation is completed.

TO THE FULLEST EXTENT PERMITTED BY LAW, JM DISCLAIMS ANY IMPLIED WARRANTY, INCLUDING THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND LIMITS SUCH WARRANTY TO THE DURATION AND TO THE EXTENT OF THE EXPRESS WARRANTY CONTAINED IN THIS GUARANTEE.

THE EXCLUSIVE RESPONSIBILITY AND LIABILITY OF JM UNDER THIS GUARANTEE IS TO MAKE REPAIRS NECESSARY TO MAINTAIN THE ROOFING SYSTEM IN A WATERTIGHT CONDITION IN ACCORDANCE WITH THE OBLIGATIONS OF JM UNDER THIS GUARANTEE.

JM AND ITS AFFILIATES WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES TO THE BUILDING STRUCTURE (UPON WHICH THE ROOFING SYSTEM IS AFFIXED) OR IT'S CONTENTS, LOSS OF TIME OR PROFITS OR ANY INCONVENIENCE. JM AND ITS AFFILIATES SHALL NOT BE LIABLE FOR ANY DAMAGES WHICH ARE BASED UPON NEGLIGENCE, BREACH OF WARRANTY, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY OTHER THAN THE EXCLUSIVE LIABILITY SET FORTH IN THIS GUARANTEE.

No one is authorized to change, alter, or modify the provision of this Guarantee other than the Manager, Guarantee Services Unit or authorized delegate. JM's delay or failure in enforcing the terms and conditions contained in this Guarantee shall not operate as a waiver of such terms and conditions. This Guarantee is solely for the benefit of the Building Owner identified above and Building Owner's rights hereunder are not assignable. Upon sale or other transfer of the Building, Building Owner may request transfer of this Guarantee to the new owner, and JM may transfer this Guarantee, in its sole discretion only after receiving satisfactory information and payment of a transfer fee, which must be paid no later than 30 days after the date of Building ownership transfer.

In the event JM pays for repairs which are required due to the acts or omissions of others, JM shall be subrogated to all rights of recovery of the Building Owner to the extent of the amount of the repairs.

Because JM does not practice Engineering or Architecture, neither the issuance of this Guarantee nor any review of the Building's construction or inspection of roof plans (or the Building's roof deck) by JM representatives shall constitute any warranty by JM of such plans, specifications, and construction or in any way constitute an extension of the terms and conditions of this Guarantee. Any roof inspections are solely for the benefit of JM.

JM does not supervise nor is it responsible for a roofing contractor's work except to the extent stated herein, and roofing contractors are not agents of JM.

*JOHNS MANVILLE ("JM") is a Delaware corporation with its principal mailing address at P.O. Box 5108, Denver, Colorado 80217-5108.

Fred Stephan

By : Fred Stephan
Title : Vice President & General Manager
Roofing Systems Group

Attorney-in-Fact

What To Do If Your Roof Leaks

1. Building Owner must notify JM Guarantee Services Unit (see below) immediately upon discovery of the leak and in no event later than 30 days after discovery of the leak.

2. In response to this notice, JM will arrange to inspect the Roofing System, and
   (i) if the leaks are the responsibility of JM under this Guarantee (see Limitations and Exclusions), JM will take prompt appropriate action to return the Roofing system to a watertight condition, or
   (ii) if the leaks are not the responsibility of JM under this Guarantee, advise the Building Owner within a reasonable time of the minimum repairs that JM believes are required to return the Roofing System to a watertight condition. If the building Owner, at his expense, promptly makes such repairs to the Roofing System this Guarantee will remain in effect for the unexpired portion of its Term. Failure to make these repairs in a timely and reasonable fashion will void any further obligation of JM under this Guarantee as to the damaged portion of the Roofing System.

3. In the event an emergency condition exists which requires immediate repair to avoid damage to the Building or its contents, then Building Owner may make essential temporary repairs. JM will reimburse Building Owner for those repair expenses that would have been the responsibility of JM under the Guarantee.

Maintenance Program

In order to continue the coverage of this Guarantee the following maintenance program must be implemented.

There are a number of items not covered by this Guarantee that are the responsibility of the owner. In order to ensure that your new roof will continue to perform its function, you must examine and maintain these items on a regular basis:

- Maintain a file for your records on this roof, including this Guarantee, invoices, and subsequent logs of all inspections performed and repairs that are made to the roof.
- Inspect your roof at least semiannually. This is best done in the Spring, after the roof has been exposed to the harsh winter conditions, and, in the Fall after a long hot summer. It is also a good idea to examine the roof for damage after severe weather conditions such as hailstorms, heavy rains, high winds, etc.
- Since these types of roofs typically have a low slope they are easily examined. However, care must be taken to prevent falling accidents.

When checking the roof:

- Remove any debris such as leaves, small branches, dirt, rocks, etc. that have accumulated.
- Clean gutters, down spouts, drains and the surrounding areas. Make certain they allow water to flow off the roof. Positive drainage is essential.
- Examine all metal flashings and valleys for rust and damage that may have been caused by wind or traffic on the roof, and make certain they are well attached and sealed. Any damaged, loose, or poorly sealed materials must be repaired by an Approved Roofing Contractor.
- Examine the areas that abut the roof. Damaged masonry, poorly mounted counterflashing, loose caulking, bad mortar joints, and any loose stone or tile coping can appear to be a membrane leak. Have these items repaired if found to be defective.
- Examine the edges of the roof. Wind damage often occurs in these areas. Materials that have been lifted by the wind need to be corrected by an Approved Roofing Contractor.
- Examine any roof top equipment such as air conditioners, evaporative coolers, antennas, etc. Make certain they do not move excessively or cause a roof problem by leaking materials onto the roof.
- Check the building exterior for settlement or movement. Structural movement can cause cracks and other problems which in turn may lead to leaks in your roofing system.
- Examine protective coatings; any cracked, flaking, or blistered areas must be recoated.

Protecting your investment:

- Avoid unnecessary roof top traffic.
- If you allow equipment servicemen to go onto the roof, advise them to be careful. Dropped tools, heavy equipment, etc. can damage the membrane. Log all such trips to the roof.
- Do not allow service personnel to make penetrations into the roof; these are to be made only by an Approved Roofing Contractor.

All the terms and conditions of this Guarantee shall be construed under the internal law of the state of Colorado without regard to its conflicts of law principles. Invalidity or unenforceability of any provisions herein shall not affect the validity or enforceability of any other provision which shall remain in full force and effect.

Guarantee Services Unit

Johns Manville, Guarantee Services Unit, 10100 West Ute Ave., Littleton, CO 80127 (shipping address)
Johns Manville, Guarantee Services Unit, P.O. Box 625005, Littleton, CO 80162-5005 (mailing address)

Guarantee Services Regional Phone Numbers

Eastern	Northern	Southwest/West
800-345-9603	800-231-1064	800-922-5922

www.jm.com E-mail: gsu@jm.com