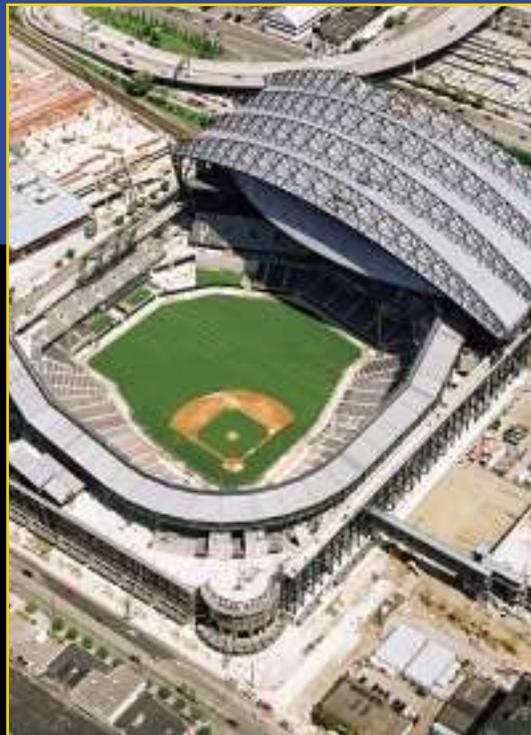




Johns Manville

07500/JOH
BuyLine 5318

Commercial/Industrial Roofing Systems





Johns Manville

Commercial/Industrial Roofing Systems

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To access data on JM Roofing Systems FAX-on-demand program, FAX Express®, call 888-329-3977 and follow instructions or visit our web site at www.jm.com

The broadest line of commercial and industrial roofing systems in North America.

Total solutions — from a single source.

No other company is so committed to being your single source for every product and service you need to install a complete roofing system in the most efficient and effective manner possible.

From insulation to membrane to adhesives to fastening systems to accessories to copings and fascia, you name it, we have it. And if it can be prefabricated, we'll prefabricate it.

Technical support, training and inspection.

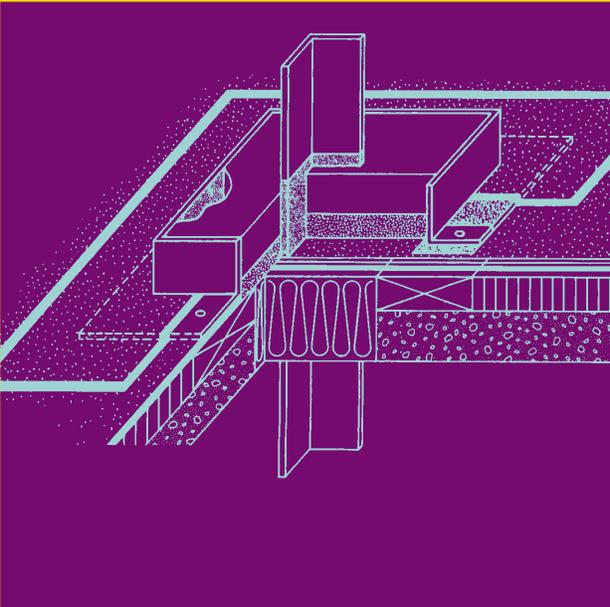
The most advanced materials available are only as effective as the quality of their installation. That's why Johns Manville maintains one of the industry's most stringent and comprehensive approved roofing contractor programs. In addition, JM offers industry-wide applicator training as well as numerous local training schools, all backed by more than 140 years of roofing experience.

Training is provided for architects and contractors. Participants are instructed on procedures and requirements and shown, first hand, the use of JM accessories, welding techniques, and fastener installation.

Every installation requiring a guarantee is rigorously inspected to verify that proper installation procedures were followed. When completed and approved for the JM guarantee, the roof has undergone one of the most exhaustive inspections in the roofing industry.

A total commitment to research and development.

At JM, product improvement and new product development are ongoing endeavors in order to bring contractors even better systems in the future. The ability to design compounds in world-class labs, produce prototype membranes on our complete array of lab calenders and laminators gives JM an R&D capability second to none.



The most comprehensive guarantees in the business.

Both the Johns Manville Gold Shield and UltraGuard Guarantees cover installations for up to 20 years when the appropriate JM specifications and inspections are followed.



Perhaps the most important factor about a JM roofing system guarantee is that it is truly a total system guarantee, covering all the Johns Manville products in the system — not just the membrane, but the insulation, the fascia, the drains and other accessories.

The company behind the guarantee.

The company that was to become Johns Manville got its start in New York in 1858. Now, more than 140 years later, JM is the largest manufacturer of roofing systems in North America. JM is also a leading manufacturer and marketer of premium quality insulation and other building products, operating over 50 manufacturing facilities in North America, Europe and China.

The core values at the heart of the JM business philosophy are people, safety, ethics and the environment. This is the company that stands behind the JM guarantee.



Selecting your roofing system

Suitability for conditions.

Many factors influence the selection of the most appropriate roofing system to be applied to a structure. The chart at right is a quick reference guide to help you in your selection process. Some of the most important considerations are discussed in more detail here, beginning with the importance of identifying the climatic conditions which the roofing system must withstand.

JM roofing membranes are engineered in varying thicknesses and formulations to accommodate varying climatic conditions across the United States. The map at right identifies the three primary regions for which our products have specifically been designed.

Suitability for design.

How much weight is the roofing structure designed to bear? Will it handle ballast or must the system be attached or adhered? What is the slope? Is the deck nailable or non-nailable? These questions and others are important considerations in the selection of the roofing system to be applied.

The quality of the materials.

Assuming good workmanship and respect for the principles of good roof design, the quality of the materials themselves is key to the ability of the roof to perform effectively on a long-term basis.

It is always a good idea to compare properties of the materials being considered. What is the tensile strength? What are the elongation properties? Tear and puncture resistance? Ozone resistance? Many JM roofing membranes are designed for optimal performance, are tested for these and other properties, and have the appropriate agency approvals from Factory Mutual, UL, ICBO and such local building authorities as Metropolitan Dade County, Florida.

The integration of components.

When developing a roofing specification, the designer and specifier must consider the interaction of the various components of the roof with each other, and with the substrate, as well as the chemical and physical compatibility of the components with each other. The best way to achieve this is to view the roof as a "system."

The credibility of the manufacturer.

The number of products available, their varying properties, and the lack of quantitative data on many newer products has created an extremely complex panorama to specifiers. Thus, an analysis of a system being considered should include an evaluation of the manufacturer as well as the products. A manufacturer review should include: 1) experience, 2) research operations, 3) single-source capability, 4) inspection procedures, 5) approved applicator program, 6) training programs, and 7) guarantees.



The three types of systems.

There are three basic types of roofing membranes available today, each with its own set of considerations for the roofing system as a whole.

Built-Up Roofing Systems. Conventional bituminous built-up roofing systems consist of layers of water-proofing bitumen alternating with layers of reinforcing felts with an appropriate protective surfacing.

Modified Bitumen Systems. Modified bitumens are factory-manufactured membranes, provided in rolls, which are adhered to the substrate and lapped with hot asphalt or heat welding. There are two types: SBS (rubber modifier) and APP (plastic modifier).

Single Ply Systems. Single ply membranes are factory manufactured in sheet form. They can be ballasted, mechanically attached or adhered. Again, there are two types: thermoplastic (plastic polymers) and thermoset (rubber polymers).

For complete information and specifications on BUR and Modified Bitumen products, please refer to the JM Commercial/Industrial Roofing Systems Manual (RS-7030). For information relating to Single Ply products refer to the JM UltraGard Single Ply manual (RS-8100).

Roofing System Selection

To ensure the integrity of the roofing system, the specifier should use a single-source supplier for all components of the roof assembly. In specifying a total-performance system, a designer capitalizes on the experience and knowledge of the manufacturer and can qualify for a total system guarantee.

The extensive JM Roofing Systems product line, delivered through a single source of supply, is the basis for our ability to assure the compatibility and, ultimately, the integrity of the finished roofing system.

Identify Region

Use the map below to designate the region in which the structure is to be built.

Select Roof Deck.

There are many types of decks, such as steel, wood and concrete.

Roofing System Guarantee

JM roofing systems can be guaranteed from five to 20 years depending on materials and construction.

UL/FM Concerns

Underwriters Laboratories and Factory Mutual approvals may be specified to meet code requirements.

Vapor Retarder

Determine if a vapor retarder is required for the location.

Roof Insulation

Determine the amount and type of roof insulation.

Roof Membrane

Determine the type of roof membrane: built-up; modified bitumen; or single ply.

Roof Surface or Coating

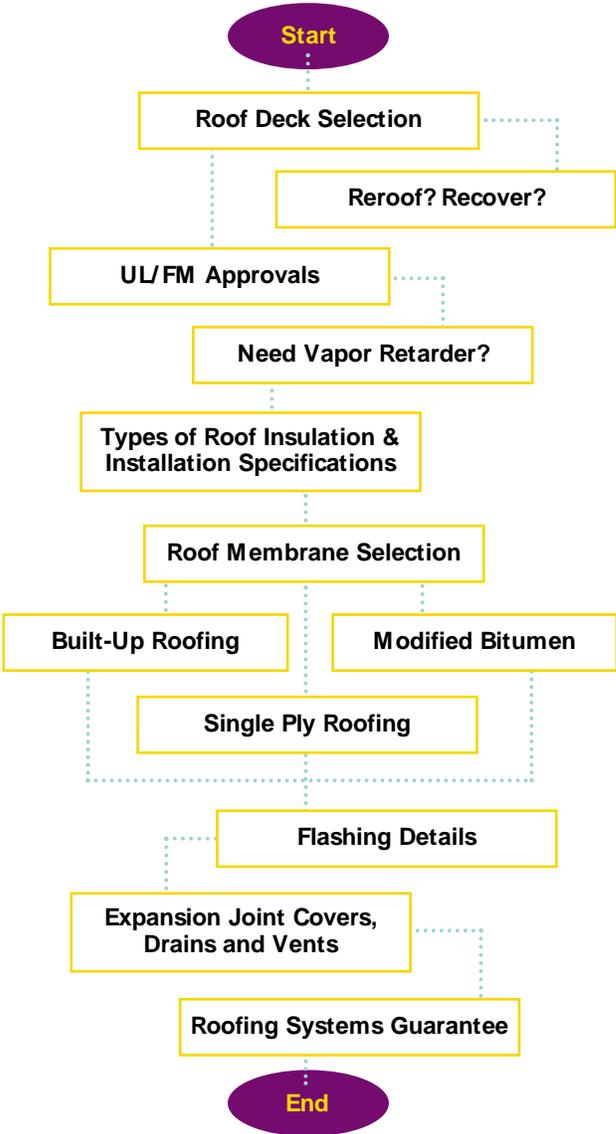
Determine the appropriate surfacing material or special coating.

Flashing Details

Design flashing details per the roofing manufacturer's recommendations.

Roofing Accessories

Select expansion joint covers, drains and vents which are compatible with the roofing system.



Built-Up Roofing Systems

Conventional bituminous built-up roofing (BUR) membranes have been used for over 100 years and are still a viable form of roofing today. The membrane is field fabricated and consists of layers of a waterproofing bitumen alternating with plies of reinforcing felts with an appropriate protective surfacing. The reliability of BUR is enhanced by the redundancy of the plied-in layers of roofing felts.

JM manufactures a complete line of fiber glass felts including ply, base and mineral surfaced cap sheets. Ply felts are coated with a high grade asphalt. Two types are available: GlasPly® Premier and GlasPly IV.



Base felts are coated with a filled asphalt and are intended for use as a base sheet in nailed specifications. Our standard base felt is called GlasBase®. Another version, which incorporates a coating of rubber-modified asphalt, is called GlasBase Plus™. A lighter weight product known as PermaPly 28 is available. And GlasKap®, a glass mat coated with filled asphalt and surfaced with mineral granules for use as a cap sheet in BUR systems, is also available.

Another product, Ventsulation® Felt, is primarily used as a venting base sheet for applying a new built-up roof over an existing bituminous membrane that is no longer serviceable, or over lightweight insulating concrete substrates. For flashing, a uniquely reinforced fiber glass felt known as GlasTite® Flexible is available. Of course, various cements, coatings and surfacings are available to make for a complete, single-source system.

JM approved asphalt is required for hot applied built-up roofing system applications. Roofing asphalts are available in four types (specified by softening point). The slope of the roof, in conjunction with the climatic constraints, determines the type to be used. The success or failure of a roofing system depends on the use of the proper type of asphalt as called for in the roofing specification.



JM Built-Up Roofing Components

	ASTM Standard
Ply Felts	
GlasPly Premier	D 2178 Type VI
GlasPly IV	D 2178 Type IV
Base Sheets	
GlasBase Plus	D 4601 Type I
GlasBase	D 4601 Type I
PermaPly 28	D 4601 Type II
Ventsulation	D 4897 Type II
Flashing	
GlasTite Flexible	
Cap Sheet	
GlasKap	D 3909
Roofing Cements	
Bestile Industrial Roof Cement	D 4586 Type II
Roof Coatings and Surfacing	
Topgard Type A	
Topgard Type B	D 1227 Type IV
Fibrated Aluminum	D 2824 Type III
Primer	
Concrete Primer	D 41

Built-Up Roofing Systems



4GIG

Number of Plies **Surfacing**

Type of Ply **Substrate**

G = Fiber glass

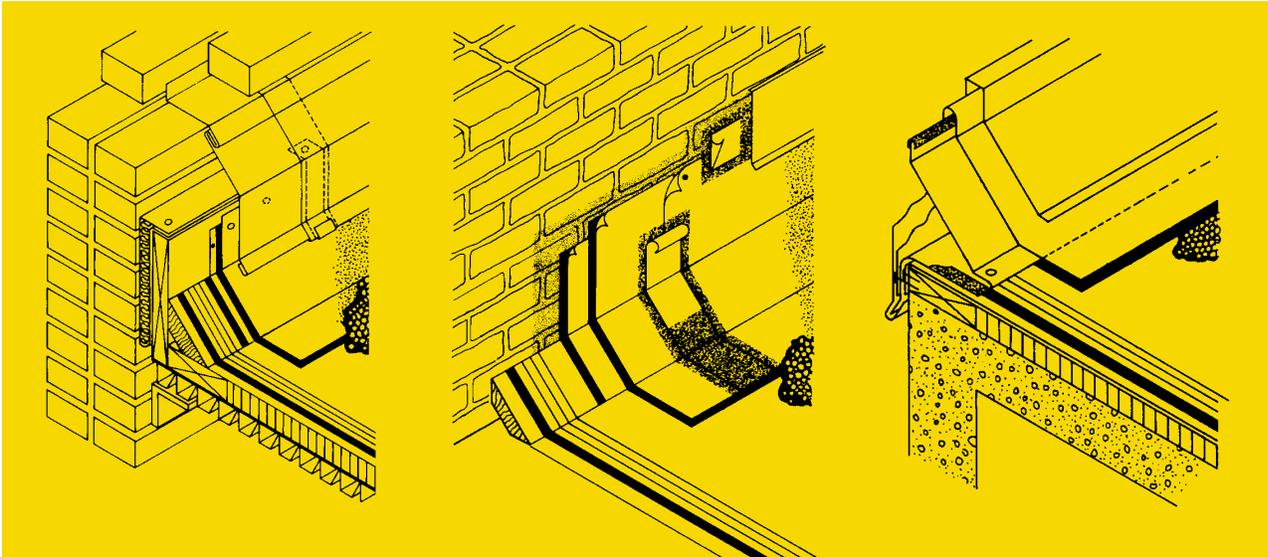
I = Insulated and/or Non-Nailable
N = Nailable
L = Lightweight Concrete

G = Gravel
S = Smooth
C = Cap Sheet
P = Protected

Roof Finder Index

Region*	Deck Type	Roof Slope	Surface	Description	Spec. Number
Specifications for Hot Asphalt Applied Modified Bitumens					
All	I	Up to 6" (152 mm)	Smooth	4 plies JM Ply Felt	4GIS
All	I	Up to 6" (152 mm)	Smooth	3 plies JM Ply Felt	3GIS
All	N	Up to 6" (152 mm)	Smooth	JM Base Sheet, 4 JM Ply Felts	5GNS
All	N	Up to 6" (152 mm)	Smooth	JM Base Sheet, 3 JM Ply Felts	4GNS
2 & 3	N	Up to 6" (152 mm)	Smooth	JM Base Sheet, 2 JM Ply Felts	3GNS
All	I	Up to 3" (76 mm)	Gravel	4 plies JM Ply Felt	4GIG
All	I	Up to 3" (76 mm)	Gravel	3 plies JM Ply Felt	3GIG
All	N	Up to 3" (76 mm)	Gravel	JM Base Sheet, 4 JM Ply Felts	5GNG
All	N	Up to 3" (76 mm)	Gravel	JM Base Sheet, 3 JM Ply Felts	4GNG
2 & 3	N	Up to 3" (76 mm)	Gravel	JM Base Sheet, 2 JM Ply Felts	3GNG
All	L	Up to 3" (76 mm)	Gravel	JM Base Sheet, 4 JM Ply Felts	5GLG
All	L	Up to 3" (76 mm)	Gravel	JM Base Sheet, 3 JM Ply Felts	4GLG
2 & 3	L	Up to 3" (76 mm)	Gravel	JM Base Sheet, 2 JM Ply Felts	3GLG
All	I	¼" to 6" (6 mm to 152 mm)	Mineral	4 plies JM Ply Felt & GlasKap	5GIC
All	I	¼" to 6" (6 mm to 152 mm)	Mineral	3 plies JM Ply Felt & GlasKap	4GIC
3 only	I	¼" to 6" (6 mm to 152 mm)	Mineral	2 plies JM Ply Felt & GlasKap	3GIC
All	N	¼" to 6" (6 mm to 152 mm)	Mineral	JM Base Sheet, 3 JM Ply Felts & GlasKap	5GNC
All	N	¼" to 6" (6 mm to 152 mm)	Mineral	JM Base Sheet, 2 JM Ply Felts & GlasKap	4GNC
3 only	N	¼" to 6" (6 mm to 152 mm)	Mineral	JM Base Sheet, JM Ply Felt & GlasKap	3GNC

* See specification for any additional limitations.



SBS Modified Bitumen Roofing Systems

By modifying premium grade asphalts, JM has developed formulations that enhance the asphalt's overall weatherability. By combining these modified asphalts with nonwoven polyester or glass fiber reinforcements, JM produces waterproofing systems that exhibit tremendous strength, elasticity and weatherability.

Our SBS product (coated with an elastomeric blend of asphalt and Styrene-Butadiene-Styrene rubber) has elongation and recovery properties that allow it to accommodate recurring stresses, reducing the possibility of premature fatigue failure. This also gives it truly remarkable cold weather performance.



SBS products are typically installed using hot asphalt as the bonding adhesive. But they can also be installed in compatible, low-solvent, cold adhesives. Unlike BUR systems, the mopping asphalt serves more as an adhesive than as a waterproofing agent. And, although a base sheet is commonly used, its purpose is primarily as substrate preparation rather than another layer of reinforcement or waterproofing. In hybrid BUR/modified bitumen

systems, two or more plies of built-up roofing are capped with modified bitumen. This combination offers an SBS membrane system with the redundancy of a BUR system.

DynaWeld Base and DynaWeld Cap FR sheets however, the latest additions to the JM SBS modified bitumen line, are designed specifically for installation using heat-welding application techniques.

Modified bitumen blends are sensitive to ultraviolet rays and, therefore, require protection. All of the JM modified bitumen products are covered with ceramic roofing granules or have a surface compatible with coatings or other protective surfacings.

The SBS products provide a broad range of formulations and mat composites for varying degrees of strength, elasticity and flexibility. Many of the products are also available with fire-retardant chemicals. Various flashing sheets, cements and adhesives are also available.

For additional information, contact the Regional Technical Services Manager who can be reached through the JM Regional Sales Office nearest you, or the Technical Services Specialists at the Guarantee Services Unit.

SBS Modified Bitumen Components

	ASTM Standard*
Granule-Surfaced Cap Sheets	
DynaKap	D 6162 Type II Grade G
DynaKap FR	D 6162 Type II Grade G
DynaGlas	D 6163 Type I Grade G
DynaGlas FR	D 6163 Type I Grade G
DynaGlas 30 FR	D 6163 Type I Grade G
DynaLastic 180	D 6164 Type I Grade G
DynaLastic 180 FR	D 6164 Type I Grade G
DynaLastic 250	D 6164 Type II Grade G
DynaLastic 250 FR	D 6164 Type II Grade G
DynaWeld Cap FR	D 6163 Type I Grade G
Smooth-Surfaced Cap Sheets	
DynaPly	D 6162 Type II Grade S
DynaLastic 180 S	D 6164 Type I Grade S
Base Sheets	
DynaBase	D 6163 Type I Grade S
DynaWeld Base	D 6163 Type I Grade S
Flashing	
DynaFlex (Granule-Surfaced)	D 5147
DynaClad (Foil-Faced)	D 6298
Cements and Adhesives	
MBR Flashing Cement	
MBR Bonding Cement	
MBR Utility Cement	
MBR Cold Application Adhesive	

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



SBS Modified Bitumen Roofing Systems

Number of Plies

3CID

Surfacing

D = SBS Cap Sheet (Granule Surface)
G = Gravel
P = Protected

Type of SBS Cap Sheet

C = Composite F = Fiber Glass P = Polyester

Substrate

I = Insulated N = Nailable L = Lightweight

Roof Finder Index

Region*	Deck Type	Roof Slope	Surface	Description	Spec. Number
Specifications for Hot Asphalt Applied Modified Bitumens					
All	I	1/4"-3" (6-76 mm)	SBS Cap Sheet	Three Ply Felts, SBS Sheet	4CID/4FD/4PID
All	N	1/4"-3" (6-76 mm)	SBS Cap Sheet	Base Felt, Two Ply Felts, SBS Sheet	4CND/4FND/4PND
All	L	1/4"-3" (6-76 mm)	SBS Cap Sheet	Base Felt, Two Ply Felts, SBS Sheet	4CLD/4FLD/4PLD
All	I	1/4"-3" (6-76 mm)	SBS Cap Sheet	Two Ply Felts, SBS Sheet	3CID/3FD/3PID
All	I	1/4"-3" (6-76 mm)	SBS Cap Sheet	Two Base/Ply Felts, SBS Sheet	3CID/3FD/3PID (Alt)
All	N	1/4"-3" (6-76 mm)	SBS Cap Sheet	Base Felt, Base/Ply Felt, SBS Sheet	3CND/3FND/3PND
All	L	1/4"-3" (6-76 mm)	SBS Cap Sheet	Base Felt, Base/Ply Felt, SBS Sheet	3CLD/3FLD/3PLD
All	I	1/4"-3" (6-76 mm)	Gravel	Two Ply Felts, SBS Sheet	3CIG/3FIG/3PIG
All	I	1/4"-3" (6-76 mm)	Gravel	Two Base/Ply Felts, SBS Sheet	3CIG/3FIG/3PIG (Alt)
All	N	1/4"-3" (6-76 mm)	Gravel	Base Felt, Base/Ply Felt, SBS Sheet	3CNG/3FNG/3PNG
All	L	1/4"-3" (6-76 mm)	Gravel	Base Felt, Base/Ply Felt, SBS Sheet	3CLG/3FLG/3PLG
All	I	1/4"-3" (6-76 mm)	SBS Cap Sheet	Base/Ply Felt, SBS Sheet	2CID/2FD/2PID
All	N	1/4"-3" (6-76 mm)	SBS Cap Sheet	Base Felt, SBS Sheet	2CND/2FND/2PND
All	L	1/4"-3" (6-76 mm)	SBS Cap Sheet	Base Felt, SBS Sheet	2CLD/2FLD/2PLD
All	I	1/4"-3" (6-76 mm)	Gravel	Base/Ply Felt, SBS Sheet	2CIG/2FIG/2PIG
All	N	1/4"-3" (6-76 mm)	Gravel	Base Felt, SBS Sheet	2CNG/2FNG/2PNG
All	L	1/4"-3" (6-76 mm)	Gravel	Base Felt, SBS Sheet	2CLG/2FLG/2PLG

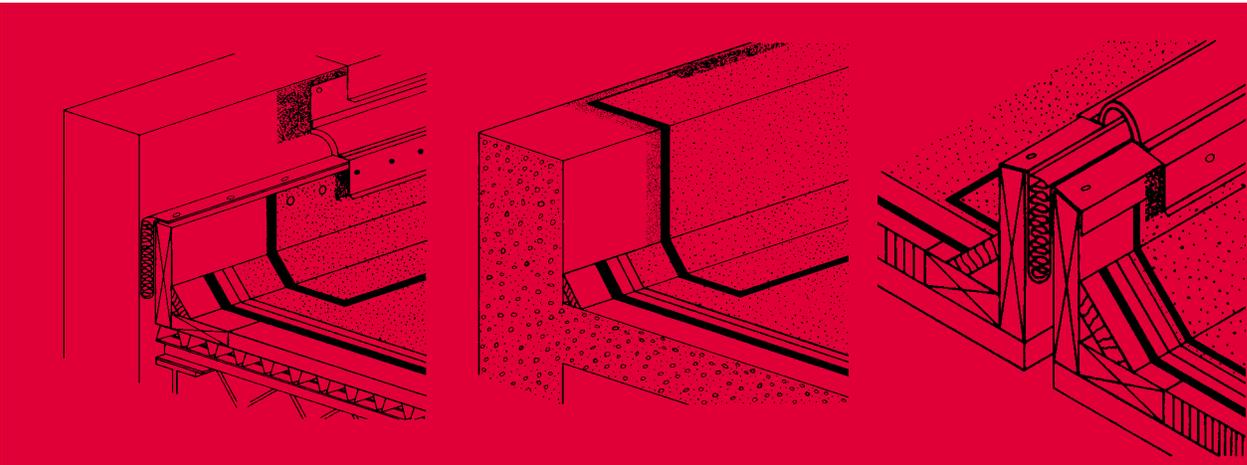
Specifications for Two-Part Cold Adhesive Applied SBS Modified Bitumens – Adhesive substitutes for asphalt used in above specs.

Squeegee Method or Spray Method – Use specification designations above with the suffix “-C2”. (Spec ID) - C2

Specification for One-Part Cold Adhesive Applied SBS Modified Bitumens – Adhesive substitutes for asphalt used in above specs.

Squeegee Method – Use specification designations above with the suffix “-C1”. (Spec ID) - C1

* See specification for any additional limitations.



APP Modified Bitumen Roofing Systems



APP Modified Bitumen Roofing Components

	ASTM*
Granular-Surfaced Cap Sheets	
BICOR M FR	D 6223 Type II Grade G
APPeX 4.5M FR**	D 6222 Type I Grade G
APPeX 4.5M**	D 6222 Type I Grade G
Smooth-Surfaced Cap Sheets	
APPeX 4S	D 6222 Type I Grade S
Base Sheets	
APP Base	D 5147*

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

** Due to weatherability, durability and handling characteristics, may also be used as flashing material.

Like our SBS products, our APP membranes provide unsurpassed tensile strength while maintaining critical flexibility — even in the coldest environments. However, with APP membranes (coated with a proprietary blend of asphalt and atactic polypropylene) contractors now have a more efficient mode of application by means of heat welding.

The back coating of APP modified asphalt is heated to a point where the bitumen acts as an adhesive, bonding the sheet to a substrate, and bonding the overlapping edges. Effectively, the product has a built-in, hot-melt adhesive, making hot mopping unnecessary.

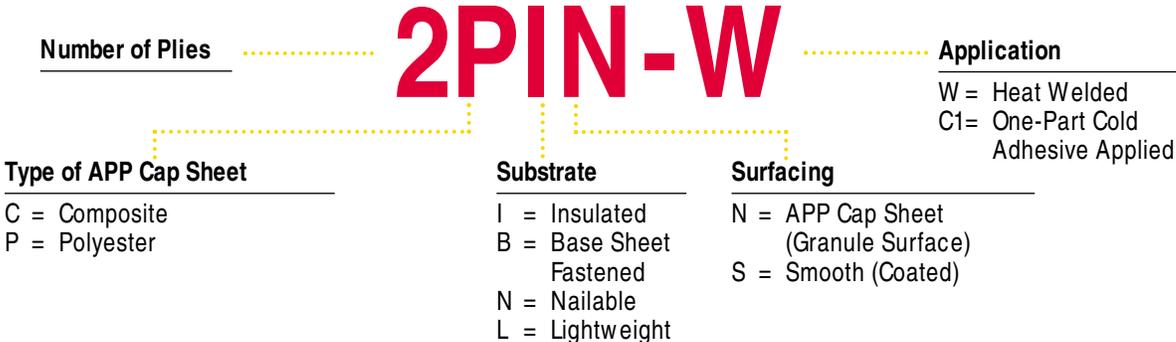
While all APP products are designed to be heat welded, selected products can also be applied in cold adhesive. These products, which in most applications may be heat welded, can also be applied with cold application adhesive.

Most of the APP membranes have a factory applied mineral surfacing (available in colors) and need no further protection from harmful UV rays. However, for various purposes, JM also provides smooth-surfaced APP membranes which must subsequently be protected from UV rays by the application of a compatible roof coating.

For additional information, contact the Regional Technical Services Manager who can be reached through the JM Regional Sales Office nearest you, or the Technical Services Specialists at the Guarantee Services Unit.



APP Modified Bitumen Roofing Systems



Roof Finder Index

Region*	Deck Type	Surface	Description	Spec. Number
Specifications for Hot Asphalt Applied Modified Bitumens				
All	I	Cap Sheet	Two APP Base, APP Cap	3CIN-W/3PIN-W
All	I	Cap Sheet	Two Ply Felt, APP Cap	3CIN-W/3PIN-W (Alt)
All	B	Cap Sheet	Two APP Base, APP Cap	3CBN-W/3PBN-W
All	N	Cap Sheet	Two APP Base, APP Cap	3CNN-W/3PNN-W
All	L	Cap Sheet	Two APP Base, APP Cap	3CLN-W/3PLN-W
All	I	Cap Sheet	Two APP Base, APP Cap	3CIS-W/3PIS-W
All	I	Cap Sheet	Two Ply Felt, APP Cap	3CIS-W/3PIS-W (Alt)
All	B	Cap Sheet	Two APP Base, APP Cap	3CBS-W/3PBS-W
All	N	Cap Sheet	Two APP Base, APP Cap	3CNS-W/3PNS-W
All	L	Cap Sheet	Two APP Base, APP Cap	3CLS-W/3PLS-W
All	I	Cap Sheet	One APP Base, APP Cap	2CIN-W/2PIN-W
All	I	Cap Sheet	One Ply Felt, APP Cap	2CIN-W/2PIN-W (Alt)
All	B	Cap Sheet	One APP Base, APP Cap	2CBN-W/2PBN-W
All	N	Cap Sheet	One APP Base, APP Cap	2CNN-W/2PNN-W
All	L	Cap Sheet	One APP Base, APP Cap	2CLN-W/2PLN-W
All	I	Cap Sheet	One APP Base, APP Cap	2CIS-W/2PIS-W
All	I	Cap Sheet	One Ply Felt, APP Cap	2CIS-W/2PIS-W (Alt)
All	B	Cap Sheet	One APP Base, APP Cap	2CBS-W/2PBS-W
All	N	Cap Sheet	One APP Base, APP Cap	2CNS-W/2PNS-W
All	L	Cap Sheet	One APP Base, APP Cap	2CLS-W/2PLS-W
All	I	Cap Sheet	One DuraBoard, APP Cap	1CIN-W/1PIN-W
All	I	Cap Sheet	One DuraBoard, APP Cap	1CIS-W/1PIS-W

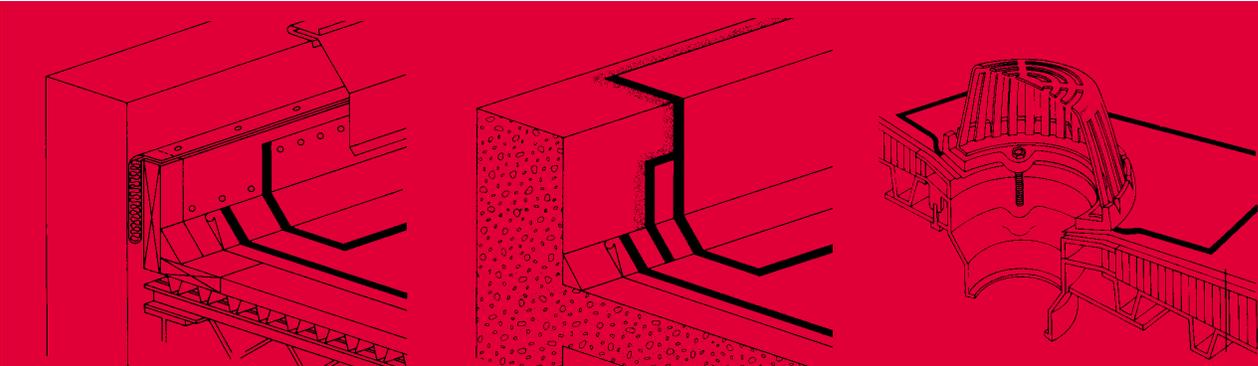
Specifications for One-Part Cold Adhesive Applied Sand Backed APP – Adhesive substitutes for Heat Welding in above specs.

Squeegee Method – Use specification designations above with the suffix “-C1” . (Spec ID) - C1

Coatings for Smooth Surfaced APP – Fibrated Aluminum, Topgard Type A, Topgard Type B.

Squeegee Method – Use specification designations above with the suffix “-C1” . (Spec ID) - C1

*See specification for any additional limitations.





Johns Manville

UltraGard® PVC/TPO Thermoplastic Single Ply Roofing Systems

Thermoplastic single ply membranes are revolutionizing the commercial and industrial roofing industry. They represent the fastest growing segment of the U.S. roofing market over the past five years.

The JM UltraGard® PVC (polyvinyl chloride) product is a polyester reinforced membrane with tough solvent- or hot-air-welded seams. The membranes are aesthetically pleasing, light in weight, yet up to five times

more puncture and tear-resistant than non-reinforced sheets for excellent durability and dimensional stability. This makes them ideal for either new construction or reroofing applications.

The UltraGard TPO (thermoplastic polyolefin) product advances the category yet another step by combining the solvent or hot-air-welding benefit of PVC with the greater flexibility and weatherability benefits of EPDM, the more traditional single-ply material (See next section).

Both PVC and TPO offer not only clean application, but great economy in installation because they allow techniques not common with bituminous membrane alternatives. Mechanically attached membranes utilize fasteners to secure the membrane to the substrate. Adhered systems utilize contact adhesives or latex adhesives (for fleece back materials).

UltraGard SR and V-2 mechanically fastened and adhered roofing systems

JM has developed specially formulated PVC membranes to meet all your thermoplastic needs. The SR membranes are reinforced with a weft inserted polyester reinforced scrim, are UV resistant, and made up of a specially formulated polyvinyl chloride (PVC) material. The SR membranes are available in thickness ranging from 50 mils to 80 mils. The V-2 membranes are a rubberized thermoplastic PVC alloy reinforced with a warp knit weft inserted polyester scrim. The V-2 membranes are available in 50 mil and 60 mil thicknesses.

With all these features and benefits, thermoplastic systems have grown from being just specialty niche products to durable, tried-and-proven roofing systems, selected for use on large industrial applications such as General Motors, as well as for high-slope roofs like the Bank One Ballpark in Phoenix, Arizona.

Every product run is tested to assure that it meets our exacting standards of quality, color and finish.

PVC/TPO Single Ply Roofing Components

Membranes

- SR-50
- SR-60
- SR-80
- V-2 50
- V-2 60
- Plus 50
- Plus 60
- OGR
- Type R Tie-In Material
- Detail Membrane 80
- Detail Strip 80

Flashing

- PVC-Clad Metal
- PVC-Clad Metal Strips
- Roofing Adhesives
- PVC Membrane Adhesive (Solvent Based)
- PVC Membrane Adhesive (California Solvent Based)
- PVC Membrane Adhesive (Latex Based)

Caulking, Sealers and Tapes

- PVC Polyurethane Caulk
- PVC Pourable Sealer
- PVC Sealant
- Aluminum Tape

Slipsheets, Protection Material

- DN Flameguard Slipsheet
- Polyester Mat Protection Material, 9 oz.

Cleaners and Welding Solvents

- PVC Membrane Cleaner
- Solvent Welding Solution

Accessories

- PVC 7 Inch (178mm) Disc Caps
- PVC Vent Pipe Boots
- PVC Inside and Outside Corners
- PVC Pitch Pockets
- PVC WBP-100 Heavy-Duty Walkway Pads



UltraGard® PVC/TPO Thermoplastic Single Ply Roofing Systems

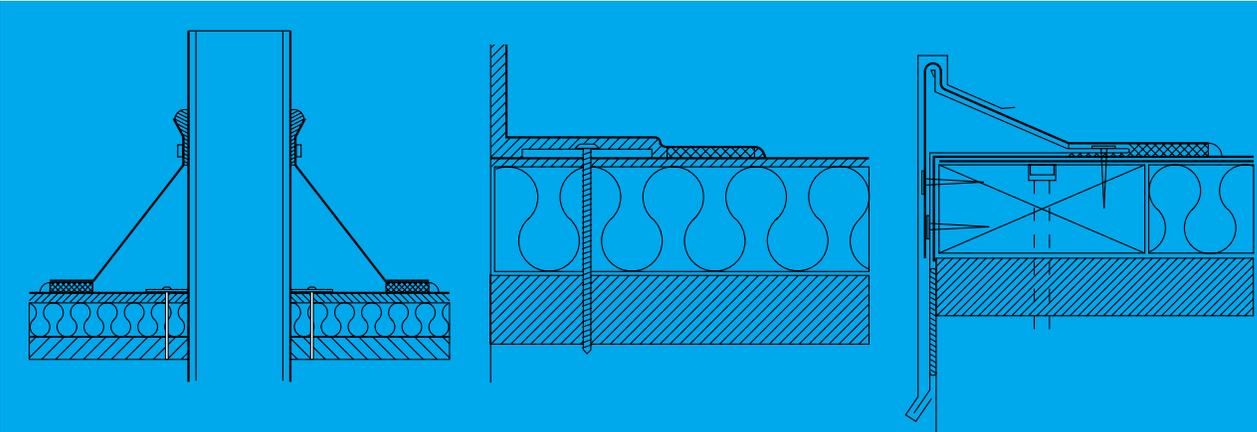
UltraGard PVC/TPO Roofing Specifications

UltraGard PVC/TPO Mechanically Fastened UltraGard PVC/TPO Adhered

Flashing Specifications can be found in the JM UltraGard Single Ply Roofing Systems Manual or by contacting your JM Sales Representative, Technical Services Specialist or at www.jm.com.



Property	Test Method	SR-50/V-250		SR-60/V-260		SR-80	
		Min./Max. Req'd	Typical	Min./Max. Req'd	Typical	Min./Max. Req'd	Typical
Thickness	ASTM D 751	.045 in.	.050±10%	.045 in.	.060±10%	.045 in.	.080±10%
Breaking Strength	ASTM D 751A	200 lbf.	300 lbf.	200 lbf.	396 lbf.	200 lbf.	420 lbf.
Elongation at Break	ASTM D 751A	15%	32%	15%	34%	15%	37%
Seam Strength (% of breaking Strength)	ASTM D 751A	75%	100%	75%	103%	75%	110%
Retention of Properties After Heat Aging (1698 hrs. at 194°F)	ASTM D 3045						
Breaking Strength		90%	94%	90%	90%	90%	95%
Elongation		90%	97%	90%	105%	90%	120%
Tear Resistance	ASTM D 751B	45 lbf.	53 lbf.	45 lbf.	56 lbf.	45 lbf.	70 lbf.
Low Temperature Bend	ASTM D 2136	Pass @-40°F	Pass @-40°F	Pass @-40°F	Pass @-40°F	Pass @-40°F	Pass @-40°F
Accelerated Weathering	ASTM D 2565						
Cracking (7x mag.)		None	None	None	None	None	None
Discoloration		Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Crazing (7x mag.)		None	None	None	None	None	None
Linear Dimensional Change (%)	ASTM D 1204	0.5% max.	0.15%	0.5% max.	0.14%	0.5% max.	0.14%
Change in Weight After Immersion in Water (168 hrs. at 158°F)	ASTM D 570	±3% max.	1.70%	±3% max.	1.50%	±3% max.	1.71%





Johns Manville

UltraGard® EPDM Thermoset Single Ply Roofing Systems



Single ply membranes entered the U.S. low-slope roofing industry during the 1970s. There are two basic types: thermoplastic (plastic polymers) and thermoset (rubber polymers).

The material used by JM Roofing Systems for its thermoset single ply membrane is called EPDM (ethylene propylene diene monomer). The polymer allows the membrane to become quite rubber-like, deforming under stress and recovering its original shape when the stress is removed. This gives the membrane superior weatherability through a wide range of temperature fluctuations. The material also demonstrates superior ozone resistance and is quite resistant to ultraviolet rays, requiring no coatings.

UltraGard EPDM membranes are large, factory-fabricated sheets spliced together on-site with compatible adhesives or tapes, offering time-saving economic advantages and clean application. The EPDM sheets may be loose-laid and ballasted, mechanically attached with fasteners, or fully adhered. The complete product line includes adhesives, sealants, flashing materials, coatings and accessories to provide a single-source systems approach to the roofing assembly.

UltraGard EPDM single ply systems are adaptable to many sizes and shapes of roofs, new or existing. They are recommended for slopes not exceeding two inches per foot for ballasted, and not exceeding six inches per foot for adhered and mechanically attached. All three application methods are suitable for new construction, retrofit or complete tear-off.

For additional information, contact the Regional Technical Services Manager who can be reached through the JM Regional Sales Office nearest you, or the Technical Services Specialists at the Guarantee Services Unit.

EPDM Single Ply Roofing Components

Membranes

- EPDM .045
- EPDM .060 (White)
- EPDM .060 FR
- EPDM .060 FR XT
- EPDM .045R XT
- EPDM .060R XT

Flashing

- EPDM Flashing
- EPDM Peel & Stick Flashing
- EPDM Peel & Stick Pipe Flashings
- EPDM Metal/Membrane Flashing

Roofing Cements

- EPDM Lap Cement
- EPDM Bonding Cement

Caulking and Sealers

- SPM Lap Caulking
- SPM Sealing Mastic
- SPM Pourable Sealer
- SPM Nite Stop

Tapes and Strips

- EPDM Seam Tape
- EPDM Peel & Stick Sealing Strip
- EPDM Peel & Stick Cover Strip
- EPDM Reinforced Termination Strip
- EPDM Reinforced Termination Strip with Tape

Anchor Discs and Bars

- EPDM Anchor Discs
- EPDM Termination Bars
- EPDM Anchor Bars

Primers and Cleaners

- EPDM Tape Primer/Wash
- EPDM Splice Cleaner

Coatings

- EPDM Color Coating (for fully adhered only)

Accessories

- EPDM Walkway Pads



UltraGard® EPDM Thermoset Single Ply Roofing Systems

UltraGard EPDM Roofing Specifications

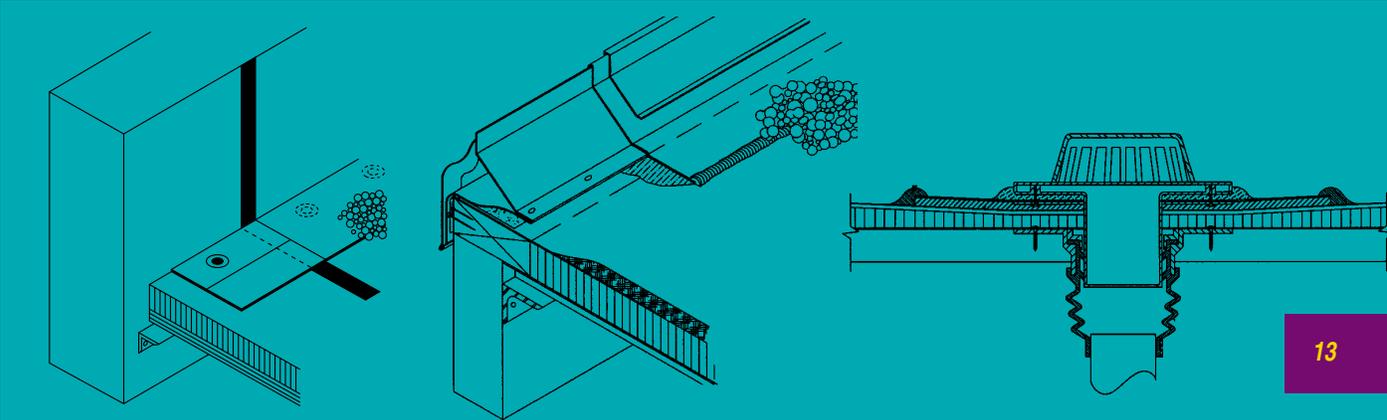
- UltraGard PVC Adhered**
- UltraGard EPDM Mechanically Fastened (Plate in the Seam)**
- UltraGard EPDM Mechanically Fastened (Batten in the Seam)**
- UltraGard EPDM Ballasted**

Flashing Specifications can be found in the JM UltraGard Single Ply Roofing Systems Manual (RS-8100) or by contacting your JM Sales Representative, Technical Services Specialist or at www.jm.com.

UltraGard EPDM Typical Properties*

Property	Test Method	.045	.045R	.060 FR	.060R
Thickness	—	.041"-.049"	.041"-.049"	.054"-.066"	.054"-.066"
Weight lbs./100 sq. ft. (nom)	—	27.4	27.4	39.3	—
Tensile Strength	ASTM D 412	1500	—	1500	—
Breaking Strength	ASTM D 751	—	90 lbf.	—	90 lbf.
Elongation	ASTM D 412	400%	250%	450%	250%
Tear Resistance (Die C)	ASTM D 624	200pli	—	200pli	—
Tear Strength	ASTM D 751	—	10 lbs. min.	—	10 lbs. min.
Shore A Hardness	ASTM D 2240	62	62	62	62
Ozone Resistance (Exposure @ 100pphm, 104° F @ 50% Extension)	ASTM D 1149	—	No cracks	—	No cracks
Accelerated Heat Aging (28 Days @ 240° F)	ASTM D 573	No cracks	—	No cracks	—
Tensile Strength Retained	—	1450	—	1450	—
Breaking Strength Retained	—	—	80 lbf. min.	—	80 lbf. min.
Elongation Retained	—	250%	200%	250%	200%
Water Absorption (166 hrs @ 158° F)	ASTM D 471	+1.0%	+4,-2	+1.5%	+4,-2
Brittleness Temperature	ASTM D 746	Volume Change -75° F	Volume Change -75° F	Volume Change -68° F	Volume Change -75° F

* Meets or exceeds all requirements of ASTM D 4637 for EPDM vulcanized sheet.





Johns Manville

UltraGard® Custom Fabricated Single Ply Roofing Systems

Our advantage over other single ply systems just got wider

Now JM UltraGard PVC single ply membrane products are available in prefabricated rolls. Standard rolls (with tabs and without tabs) are available. The following tables show the lengths and widths of the standard rolls. The rolls are shipped and placed on the roof in predetermined location, according to a custom layout, as a part of a complete roofing system which include prefabricated accessories, insulation, fasteners, adhesives, sealants, caulks, copings, fascia systems, drains, expansion joints and guarantees - all from a single source.

Up to 20 percent savings in labor time

Contractors are reporting the new UltraGard PVC prefabricated single ply roofing membranes save as much as 20 percent in labor time. The reason is that most of the seaming is already done. With the advanced technology of factory-performed dielectric welding, it's now possible to cover over 2,000 square feet without a single field weld. On larger roofs, these big sheets can save up to 75 percent of the seaming common to roll goods type systems.

This means a single ply system, with all its advantages, can be planned into a structure by designers and specifiers without worrying about huge cost differentials between single ply and other types of high-quality systems. For contractors, it means more to the bottom line, and the opportunity to be more competitive in the areas of pricing and aggressive construction schedules.

Custom planned and custom sized

One of the greatest time-saving features of the UltraGard PVC prefabricated system is that rolls can be made into sizes that best fit the needs of the building they will cover. If, for instance, two rows of skylights or HVAC units require a 16-foot-wide roll between them, or the building requires a roll only 87 feet long, the prefabricated sheets will be made up accordingly.

Working with the contractor, our computer aided design (CAD) staff will prepare a custom layout to be sent with every order. Rolls are engineered to utilize the largest size possible, labeled to correspond to the layout, and are then placed in these predetermined locations when the membrane is loaded onto the roof.

Better welds, fewer callbacks

JM now produces smooth, state-of-the-art, prefabricated single ply sheets on the world's first computer-controlled, movable dielectric welding assembly lines. The process assures the best possible seal, helping to protect contractors and designers against the number one reason for callbacks: leaks.

JM also manufactures prefabricated accessories such as flashing, pipe sleeves, inside and outside corners, scuppers and drain sleeves. Every roof is unique, so the design and fabrication of these accessory details is extremely important for leak-proof integrity. Prefabrication significantly reduces on-roof workmanship for more professional and reliable installation.

For additional information about the prefabrication capabilities of JM Roofing Systems, please check the previous two sections or contact your Johns Manville Sales Representative or Technical Services Specialist.

The following tables indicate the standard roll sizes for prefabricated panels with 5" tabs and with no tabs.

**Table 1
Prefabricated Rolls with 5" Tabs (Standard Roll Sizes)**

Width	Length	Width	Length
20'	6'-3"	20'	93'-9"
20'	12'-1"	20'	99'-7"
20'	17'-11"	15'	105'-5"
20'	23'-9"	15'	111'-3"
20'	29'-7"	15'	117'-1"
20'	35'-5"	15'	122'-11"
20'	41'-3"	15'	128'-9"
20'	47'-1"	15'	134'-7"
20'	52'-11"	15'	140'-5"
20'	58'-9"	15'	146'-3"
20'	64'-7"	15'	152'-1"
20'	70'-5"	10'	157'-11"
20'	76'-3"	10'	163'-9"
20'	82'-1"	10'	169'-7"
20'	87'-11"	10'	175'-5"

**Table 2
Prefabricated Rolls with No Tabs (Standard Roll Sizes)**

Width	Length	Width	Length
20'	6'-3"	20'	98'-9"
20'	12'-5"	20'	104'-11"
20'	18'-7"	15'	111'-1"
20'	24'-9"	15'	117'-3"
20'	30'-11"	15'	123'-5"
20'	37'-1"	15'	129'-7"
20'	43'-3"	15'	135'-9"
20'	49'-9"	15'	141'-11"
20'	55'-7"	15'	148'-1"
20'	61'-9"	15'	154'-3"
20'	67'-11"	15'	160'-5"
20'	74'-1"	10'	166'-7"
20'	80'-3"	10'	172'-9"
20'	86'-5"	10'	178'-11"
20'	92'-7"	10'	185'-1"

Roof Insulations

Johns Manville Roofing Systems markets a wide variety of insulations for built-up, modified bitumen and single ply roofing systems. They are available in a range of thicknesses and thermal values to allow the designer to specify the correct amount of insulation to minimize the total operating costs of a building.

Prior to product selection, it is recommended that the performance, design and installation concepts of the total roofing system be reviewed to ensure compatibility of all the components.

High Thermal Products



E'NRG'Y 2™ and ISO 1™ are rigid roof insulation panels composed of closed-cell polyisocyanurate foam core, bonded to universal fiber glass reinforced facers. They are designed for direct application over metal, nailable and non-nailable deck types. E'NRG'Y 2 is recommended for BUR, modified bitumen and single ply roofing systems. ISO 1 is required for use with JM Guaranteed single ply roofing systems and can also be used for other single ply, BUR and modified bitumen roofing systems. E'NRG'Y 2 and ISO 1 are available in either 20 or 25 psi (138 or 172 kPa) compressive strength. Both meet the physical property requirements of ASTM C 1289 and Federal Specification HH-I-1972/Gen and HH-I-1972/2. E'NRG'Y 2 and ISO 1 are also available in tapered panels to provide positive slope to drain.

E'NRG'Y 2 and ISO 1 Thermal Values

Thickness (nom.)*		C-Value (Conductance)		R-Value (Resistance)	
in	mm	BTU/(hr•ft ² •°F)	W/m ² •°C	(hr•ft ² •°F)/BTU	m ² •°C/W
1.0	25	0.167	0.95	6.0	1.05
1.5	38	0.10	0.57	10.0	1.76
1.8	46	0.08	0.45	12.5	2.20
2.0	51	0.07	0.40	14.3	2.52
2.3	58	0.06	0.34	16.7	2.94
2.5	64	0.054	0.31	18.6	3.27
2.7	69	0.05	0.28	20.0	3.52
3.0	76	0.046	0.26	22.0	3.83
3.4	86	0.04	0.23	25.0	4.40
4.0	102	0.033	0.19	30.0	5.34

* Other thicknesses available.

Mid Thermal Products



Fiber Glass™ Roof Insulation is composed of inorganic glass fibers, bound by a resinous binder and manufactured in rigid board form. These boards are top-surfaced with asphalt, a fiber glass scrim reinforcement and kraft paper to provide a tough, impact resistant surface for the roofing membrane. It is suitable for all types of roofing systems, except certain single-ply systems. It meets the substantive physical property requirements of ASTM C 726, except for compressive strength on products with 1" (25mm) or greater thickness. Tapered Fiber Glass Roof Insulation is available upon request. Contact your JM Sales Representative for details.

Fiber Glass Roof Insulation Thermal Values

Thickness (nom.)		C-Value (Conductance)		R-Value (Resistance)	
in	mm	BTU/(hr•ft ² •°F)	W/m ² •°C	(hr•ft ² •°F)/BTU	m ² •°C/W
3/4	19	0.36	2.04	2.78	0.49
15/16	24	0.27	1.53	3.70	0.65
1 1/16	27	0.24	1.36	4.17	0.74
1 5/8	41	0.15	0.85	6.67	1.18
2	51	0.125	0.71	8.00	1.41
2 1/4	57	0.11	0.62	9.09	1.61
3	76	0.08	0.45	12.50	2.22



This Paper Recycling Symbol indicates that JM has joined other manufacturers of commercial and consumer goods throughout the United States in the utilization of recyclable materials.

Roof Insulations

Low Thermal Products



 **Fesco® Board** is a high-density board, composed of expanded perlite, blended with selected binders and fibers. It is intended for use as a low thermal insulation board and general purpose cover board over closed-cell foam insulation boards in BUR, modified bitumen and some single ply roofing systems. Because its special TopLoc® coating prevents excessive absorption of asphalt during installation, and its expanded perlite contains air cells which provide superior insulating efficiency, Fesco Board is the best board for low thermal applications. It meets the physical requirements of ASTM C 728. Fesco Board is also available in tapered panels.

Fesco Board Thermal Values

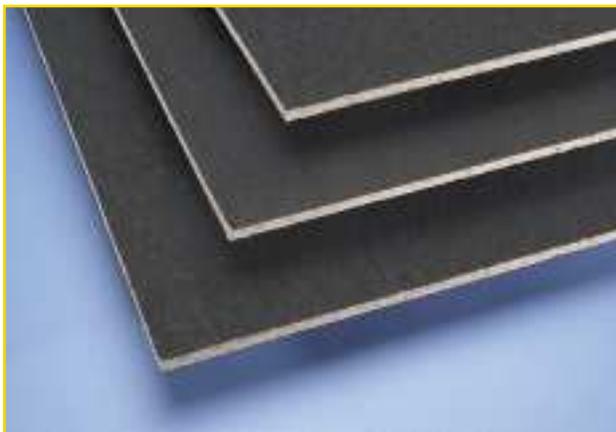
Thickness (nom.)		C-Value (Conductance)		R-Value (Resistance)	
in	mm	BTU/(hr•ft ² •°F)	W/m ² •°C	(hr•ft ² •°F)/BTU	m ² •°C/W
0.75	19	0.48	2.73	2.08	0.49
1.0	25	0.36	2.04	2.78	1.26
1.5	38	0.24	1.36	4.17	1.96
2.0	51	0.18	1.02	5.56	2.20



 **DuraBoard™** is a new perlite-based roof insulation board designed specifically for direct application of heat-weldable SBS and APP membrane systems. The top surface of the board is sealed with a special polymerized asphalt emulsion coating which helps to form good adhesion between the membrane and insulation substrate. The increased strength and durability of this high density board offers excellent handling and compression resistance.

DuraBoard Thermal Values

Thickness		Nominal C-Value (Conductance)		Nominal R-Value (Resistance)	
in	mm	BTU/(hr•ft ² •°F)	W/m ² •°C	(hr•ft ² •°F)/BTU	m ² •°C/W
0.5	13	0.83	4.7	1.2	0.21
0.75	19	0.56	3.2	1.8	0.32
1.0	25	0.44	2.5	2.3	0.41



 **1/2" Retro-Fit® Board** is a high-density board for both retro-fit and overlay applications, composed of expanded perlite blended with selected binders and fibers. The primary function is to provide an improved substrate for the roofing membrane. It is generally not considered for overall thermal insulation contribution. It meets the physical requirements of ASTM C 728. 1/2" Retro-Fit Board may be applied with hot asphalt, cold adhesive or mechanical fasteners. It is not recommended for use directly over steel decks.

1/2" Retro-Fit Board Thermal Values

Thickness (nom.)		C-Value (Conductance)		R-Value (Resistance)	
in	mm	BTU/(hr•ft ² •°F)	W/m ² •°C	(hr•ft ² •°F)/BTU	m ² •°C/W
0.5	13	0.76	4.3	1.32	0.23

Roof Insulations

Composite Products



 **Fesco® Foam** is a rigid, high thermal insulation board for use over metal, nailable and non-nailable decks in BUR, modified bitumen and certain single-ply roofing systems. It is composed of a closed-cell polyisocyanurate foam core, bonded to 1/2" Fesco Laminator Board on one side and a universal fiber glass reinforced facer on the other. It meets the physical property requirements of ASTM C 1289 and Federal Specification HH-I-1972/Gen and HH-I-1972/3. Fesco Foam is also available in tapered panels to provide positive slope to drain.

Fesco Foam Thermal Values

Thickness* (nom.)		C-Value (Conductance)		R-Value (Resistance)	
in	mm	BTU/(hr•ft ² •°F)	W/m ² •°C	(hr•ft ² •°F)/BTU	m ² •°C/W
1.5	38	0.135	0.77	7.4	1.30
2.0	51	0.088	0.50	11.4	2.00
2.5	64	0.064	0.36	15.7	2.76
3.0	76	0.052	0.29	19.4	3.41
4.0	102	0.037	0.21	27.2	4.79

* Other thicknesses available.



E'NRG'Y 2 Plus is composed of polyisocyanurate foam core bonded to 1/2" (13mm) high-density wood fiberboard on one side and a fiber reinforced facer on the other. It is especially suited to systems which

require a separation board between the roof cover and insulation. E'NRG'Y 2 Plus is intended for use with built-up and modified bitumen roofing systems. E'NRG'Y 2 meets the physical property requirements of ASTM C 1289 and Federal Specification HH-I-1972/Gen and HH-I-1972/2. It is also available in tapered form to assure positive slope to drain.

E'NRG'Y 2 Plus Thermal Values

Thickness* (nom.)		C-Value (Conductance)		R-Value (Resistance)	
in	mm	BTU/(hr•ft ² •°F)	W/m ² •°C	(hr•ft ² •°F)/BTU	m ² •°C/W
1.5	38	0.137	0.78	7.3	1.28
1.8	46	0.104	0.59	9.6	1.69
2.5	64	0.064	0.37	15.5	2.72
3.0	76	0.051	0.29	19.5	3.43
4.0	102	0.037	0.21	27.0	4.75

* Other thicknesses available.



Nailboard™ is a rigid roof insulation board composed of a closed-cell polyisocyanurate foam core bonded to 7/16" (11 mm) oriented strand board (OSB) on one side and a universal fiber glass reinforced facer on the other. It is designed for use as an insulation/nailbase underlayment for a variety of roofing systems. It meets the property requirements of ASTM C 1289 and Federal Specification HH-I-1972/Gen and HH-I-1972/2. Nailboard is also available with 5/8" (16 mm) OSB board.

Nailboard Thermal Values

Thickness* (nom.)		C-Value (Conductance)		R-Value (Resistance)	
in	mm	BTU/(hr•ft ² •°F)	W/m ² •°C	(hr•ft ² •°F)/BTU	m ² •°C/W
1.5	38	0.137	0.78	7.3	1.28
2.0	51	0.088	0.50	11.4	2.00
3.0	76	0.050	0.28	20.0	3.52
4.0	102	0.037	0.21	27.3	4.80

* Other thicknesses available.

Tapered Pre-Cut Crickets and Miters

Johns Manville Tapered Systems Group

The Tapered Systems Group has a comprehensive service to provide custom designs and takeoffs tailored to the needs of each individual project utilizing JM tapered insulation panels. For more information call 800-343-1283 or 800-341-8032 if you are calling from the Western or Southwestern States.

Johns Manville offers Tapered versions of E'NRG'Y 2, ISO 1, Fesco Foam, E'NRG'Y 2 Plus and Fesco Board to provide the roofing system designer, specifier or contractor with a means of creating positive slope to any building structure.

DiamondBack Tapered Polyiso Pre-Cut Crickets and Miters

ProDiamond™ Custom Crickets are professionally designed to divert water to a drain, scupper or low point on a tapered roof system and to meet job specifications and requirements. Standard slopes of $\frac{1}{16}$ ", $\frac{1}{8}$ ", $\frac{3}{16}$ ", $\frac{1}{4}$ " and $\frac{1}{2}$ " per foot are available and used in conjunction with JM full 4' x 4' tapered insulation panels.

OmniDiamond™ Standard Pre-Cut Crickets are designed to allow for on site adjustments for drain locations and are particularly helpful on new construction projects when actual drain placement can vary. OmniDiamond's pre-cut fan folded panels expedite installation. Available in standard slopes of $\frac{1}{4}$ " and $\frac{1}{2}$ " per foot.

Diamond 45™ Pre-Cut Miters are comprised of two separate tapered panels cut at a 45 degree angle to form a hip (outward slope) or valley (inward slope) that directs water to a low point on a tapered roof system.

Tapered Pre-Cut Crickets



Tapered Pre-Cut Miters



The DiamondBack Pre-Cut products are compatible with other types of insulation and virtually all roof covering membranes. They are cut with computerized accuracy, packaged and delivered to the job ready to install. Pre-cut DiamondBack products offer the contractor labor saving and reduced waste disposal. They are available in either 20 or 25 psi and meet the material requirements of ASTM C 1289, Federal Specification HH-I-1972/Gen and HH-I-1972/2. All DiamondBack products are available in E'NRG'Y 2 and ISO 1. ProDiamond and Diamond 45 can also be made with Fesco Foam or E'NRG'Y 2 Plus.



 **FesCant Plus Cant Strips** are an excellent way to transition from the deck to the wall of the roof. They offer far greater fire resistance than conventional wood fiber materials, and are especially applicable to heat-weldable modified bitumen systems and flashings.

 **Tapered Fesco Edge Strips** are available in standard sizes to meet special needs and are good for transitioning from membrane to nailer or tapered insulation panel to the roof level.

Roof Accessories

Johns Manville Roofing Systems accessories provide designers and specifiers with a single source of supply, assuring the compatibility of components and ultimately, the integrity of the finished roofing system. All of our roofing accessories can be included in a JM Roofing Systems Guarantee.

Shown here are the various categories of accessories. This brief section however, cannot possibly include information, data or drawings on every accessory we offer. For complete details, please call your JM Technical Services Representative at 800-445-1500 or refer to the current JM Commercial/Industrial Roofing Systems Accessories brochure (RS-6002).



Expand-O-Flash®
Watertight roof expansion joint covers for a wide variety of applications.



Expand-O-Flash® EJ/WC
Consists of foam-supported bellows with integral attachment flanges over which is attached a factory-laminated cover of sufficient width to flash the entire joint assembly, including curbs.



Expand-O-Flash® INS
A patented, factory-prefabricated, insulated expansion joint cover. It is formed using any Expand-O-Flash cover and JM Microlite "L" fiber glass insulation.



Factory-fabricated Intersections
Factory-fabricated intersections are designed for maximum flexibility and are produced using special fabrication techniques to ensure watertite, clean seam lines.



Expand-O-Gard®
Verticle wall flexible closures for a wide variety of applications.



Presto Lock® Fascia System
FM 1-90 fascia for BUR, modified bitumen and single ply membrane systems.



Presto Lock® Coping System
FM 1-90 coping for BUR, modified bitumen and single ply membrane systems.



Presto-Tite™ Fascia Systems
For maximum wind uplift protection. Available for BUR, MBR and single ply applications.



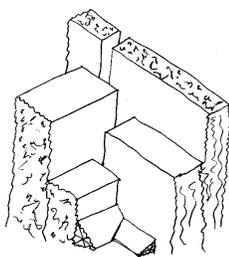
Flex-I-Drains®
Flexible bellows drains to accommodate movement between drain and plumbing.



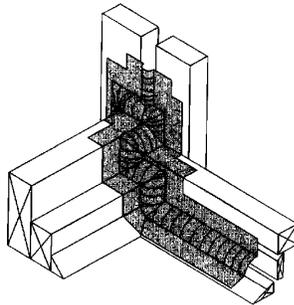
RetroDrains®
Spun aluminum, copper or co-polymer retrofit drains with cast aluminum or co-polymer domes.

RetroDrain is a registered trademark of Olympic Manufacturing Group, Inc.

Johns Manville has established a reputation based on our ability to custom design and fabricate special systems to solve building movement and closure problems. No matter how unusual your roofing challenge, we can turn your rough sketches into a custom manufactured Expand-O-Flash®, Expand-O-Gard®, Presto Lock® Fascia or Coping System or PrestoTite™ Fascia.



First the rough sketch from the customer.



This was converted into a detailed drawing for submittal by the roofing contractor.



After field verification of dimensions, this custom designed transition was fabricated by our craftsmen.



Reroofing Considerations

The process of specifying and installing a roofing system for a reroofing application can be more complex than that for a new roof. The design and installation team has to consider not only the new roofing system, but the old roofing system, and any constraints imposed by the existing building. Often, the building is occupied, and the team must be sensitive to the needs and protection of the occupants.

Step One: Evaluation

The evaluation of such a project needs to include not only the existing roof system, but the structural support system of the building. The condition of these two systems can have a significant effect on the performance of any replacement or recover system. The more accurate and comprehensive the preliminary evaluation, the greater the likelihood of a cost-effective and long-lasting solution. Please refer to the current Johns Manville Commercial/Industrial Roofing Systems Manual (RS-7030) for more detailed information on evaluating the existing system.

Step Two: Examining the Alternatives

Simple maintenance may be an acceptable alternative up to a point. As a statement from the National Institute of Standards and Testing reads, however, "There comes a time in the life of a roof on every permanent structure when it is no longer practical or economical to effect repairs, and when that time comes, reroofing is the only solution." At that time, there are essentially three options.

Option One: Complete Replacement

The complete removal of the old roof system is always the best and safest option. In this way, all questionable materials are eliminated. There is no possibility of leaving any wet or deteriorated insulation in the new system. Questions of bitumen, membrane or insulation incompatibilities are not a concern.

A complete tear-off will also reveal any problem areas in the structure and deck assembly. Deck panels may be deteriorated because of leakage over an extended period, or because of condensation problems, revealing the need for a vapor retarder. A good, solid deck is essential. Without it, the new roofing system cannot be expected to perform over the long term.

Option Two: Partial Replacement

Partial replacement normally entails removing an existing membrane and any damaged or wet insulation, then installing new insulation and a new membrane. It is essential that damaged or wet insulation be replaced, as a rigid, smooth surface is imperative for attaching the new system. If, upon visual inspection, the existing insulation is found to be dry and in good condition, retaining this asset is in the best interest of the owner.

Some insulations and membrane systems are better suited for the partial replacement option. Loose-laid and mechanically attached single ply systems typically allow for reuse of existing insulation, if it's in good condition and compatible with the new membrane. Built-up and modified bitumen membranes can be effectively removed from perlite-based insulations. A layer of new insulation should always be installed on top of the old, prior to installing any type of new membrane.

Option Three: Recover

Test cuts taken during the evaluation will determine if the existing roof is suitable for recover. If the test cuts reveal extensive areas of wet insulation, then total replacement is the only viable choice. There are, however, some circumstances which may justify the recover option.

- The system has been thoroughly investigated and found to be dry and in good condition except for normal wear and tear.
- The contents of the building are so critical they can not be exposed to possible water damage for even a short time.
- The old system contains hazardous material, and removal in a dense metropolitan area could threaten public health. Contact the local EPA office for guidelines before removing and disposing of any asbestos or other hazardous material.
- Unusual construction techniques in the original structure make it impossible to remove the existing system without damaging structural support.

Because of the complexity and extreme variability of recover conditions, it is impossible for any specification system to cover every eventuality. For additional information, or to determine if a recover system on any specific building is eligible for a guarantee, contact the Regional Technical Services Manager who can be reached through the JM Regional Sales Office nearest you, or the Technical Services Specialists at the Guarantee Services Unit.

Regional Offices and Warranty

Technical information is available from the Regional Technical Services Managers located at the Johns Manville Regional Office nearest you.

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