



# 3 PLY TPO HYBRID BONDED TO INSULATION

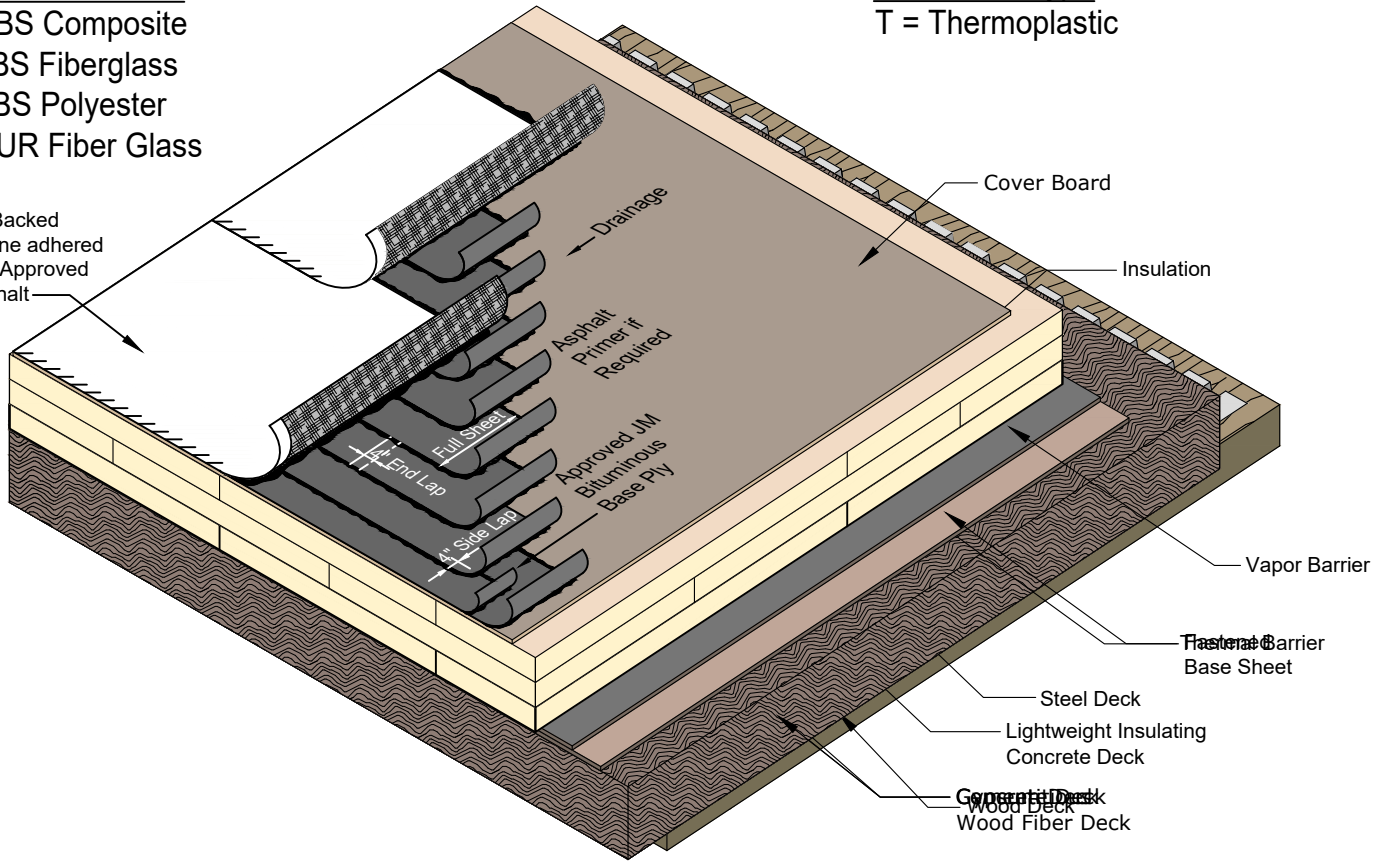
## Assembly Identification

Substrate ————— Cap Sheet  
 I = Insulated      Number of Plies → **3** **EIT** - **T8** ← Cap Sheet Thickness      T = TPO

Type of Base Sheet  
 C = SBS Composite  
 F = SBS Fiberglass  
 P = SBS Polyester  
 G = BUR Fiber Glass

Membrane Type  
 T = Thermoplastic

Fleece Backed Membrane adhered with JM Approved Hot Asphalt



For JM Guarantee Requirements Contact JM Technical Services at (800) 922-5922 Option 3 or Refer to the JM Peak Advantage Charges and Requirements-Multi Ply document

Cap Sheet	Approved Cover Boards:	Approved Thermal Barrier:	Approved Base Sheets:
TPO FB 150™ - (Hot Asphalt) TPO FB 175™ - (Hot Asphalt)	(If Applicable) 1/2" RetroFit™ Board Fesco® Board Fesco Board HD DuraBoard® JM SECUROCK® Gypsum-Fiber Roof Board JM DensDeck Prime Roof Board RetroPlus™ Roof Board ProtectoR™ HD Cover Board SeparatoR® CGF Recover Board Cover Board Thickness _____	(If Applicable) JM SECUROCK® Gypsum-Fiber Roof Board Glass-Mat Roof Board JM DEXCELL® FA Glass-Mat Roof Board Glass-Mat Roof Board JM DensDeck® Roof Board JM DensDeck Prime Roof Board DuraBoard® JM ProtectoR HD Thermal Barrier Thickness _____	(If Applicable) Over Nailable Deck DynaBase® DynaBase PR DynaBase XT DynaFast®180 S DynaLastic®180 S DynaLastic 250 S GlasBase™ Plus GlasPly® Premier GlasTite® Flexible PermaPly®28 Ventsulation® Felt
Intermediate Ply (Poly Glass Reinforced):	Approved JM Insulations:	Approved Vapor Barrier:	Deck Type:
DynaBase® PR GlasPly® Premier DynaLastic®180 S DynaLastic 250 S PermaPly®28	DuraFoam® ENRGY 3® (ENRGY 3 Options) CGF FR 20 PSI 25 PSI Tapered Tapered Fesco Board Layer 1 Thickness _____ Layer 2 Thickness _____ Layer 3 Thickness _____	(If Applicable) DynaBase® DynaBase PR GlasPly® IV GlasPly Premier 6 or 10 mil poly with taped seams	Steel (22 Ga. Min.) Structural Concrete Nailable Decks include: Cementitious Wood Fiber Gypsum Lightweight Insulating Concrete Wood (Plywood, Plank, OSB)
Base Ply (SBS Fiberglass):			
DynaBase® PR GlasPly® Premier DynaLastic®180 S DynaLastic 250 S			



# 3 PLY TPO HYBRID BONDED TO INSULATION

## General

This specification is for use over any approved structural deck that provides a suitable surface to receive the roof. This specification can also be used in certain re-roofing applications. Poured and precast concrete decks require priming prior to application of hot asphalt.

This specification is also for use over JM insulations or other rigid insulations which are not nailable and which offer a suitable surface to receive the roof. Specific written approval is required for any roof insulation not manufactured or supplied by JM.

## Note:

Consider all general instructions contained in the current JM Thermoplastic Membrane with Redundant Bituminous Ply Systems Installation Guide and the JM SBS Application Guide as part of this specification.

## Design

Consider local conditions and characteristics when designing, specifying and installing any roofing system. Information from the Single Ply Roofing Industry (SPRI), Asphalt Roofing<sup>®</sup> Manufacturers Association (ARMA), FM Global<sup>®</sup> and local building codes can provide guidelines for the designer.

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 substantially within 48 hours of a rain event.

## Membrane Substrate

The surface on which the built up, SBS modified bitumen or thermoplastic fleece backed membrane is to be applied to should be an approved structural substrate. The surface must be clean, smooth, flat and dry. Built Up roofing and SBS modified bitumen should not be applied directly to foam plastic insulations.

## Flashings and Components

Refer to the JM TPO Hybrid Details and the JM Thermoplastic Membrane with Redundant Bituminous Ply Systems Installation Guide on the JM website.

## Deck Preparation

Before roofing work is started, the deck should be carefully inspected by the roofing contractor, the deck contractor, and the owners representative to determine that it will be able to receive the roofing system by some method which will hold the system securely, either by adhesion, ballast, or mechanical fasteners. Refer to the JM Roof Decks document and the JM Thermoplastic Membrane with Redundant Bituminous Ply Systems Installation Guide for further information.

## Vapor Barrier Application

All surfaces receiving vapor barrier must be clean and free from oil, grease, rust, scale, loose paint and dirt. The substrate may need to be cleaned according to JM Application Instructions, and any required primers installed. An adhesion test may need to be performed to determine if the substrate is adequate. Vapor Barrier attachment methods include Hot Asphalt, Cold Adhesive, Heat Welded, and Self Adhered. Refer to the JM Vapor Barrier SA Installation Guide, the Vapor Barrier Data Sheets, and the Vapor Retarders section in SBS Roofing Systems for further information.

## Thermal Barrier Application

Apply the units of approved JM thermal barrier products with long joints continuous. End joints should be staggered so that they are offset at least 12" (305 mm) from the end joints in adjacent rows. Thermal barriers provide a fire resistive layer in the roof assembly directly above the deck.

## Base Sheet Application

The bituminous base sheets for these systems are either mechanically fastened or adhered with hot asphalt. Refer to the "BM" Fastening Patterns section in SBS System Application Tools for Base Sheet fastening patterns and further information.

## Insulation Application

Roof Insulation plays a key role in energy efficiency shown in codes and standards that have mandated increasingly higher minimum R-values in all U.S. climate zones. Local codes dictate the required R-values for commercial and industrial projects and the local jurisdiction should be consulted for this information.

A minimum offset of 6" (152 mm) is recommended from the previous layer of insulation. Loose laid insulations should be positioned with the long side of the boards running perpendicular to the SBS sheet orientation and continuous. End joints should be staggered at least 12" (305 mm) from the end joint in adjacent rows. A minimum offset of 6" (152 mm) is recommended from plywood joints. Refer to the Insulation Installation Instructions document for further information.

Appropriate JM Insulation Adhesives Include:

- JM One Step Foamable Adhesive
- JM Roofing System Urethane Adhesive (RSUA)
- JM Two-Part Urethane Insulation Adhesive (UIA)
- JM Green Two-Part Urethane Insulation Adhesive
- Hot Asphalt

Refer to JM drawing UA-12 INS for Adhesive Bead Patterns.

When using a low rise urethane adhesive product for insulation boards, all surfaces must be clean, dry, smooth, compatible and free of dirt, debris, oil/grease and gravel. Apply JM urethane adhesive directly to the substrate and allow it to rise and build body before placing board stock into the adhesive. Board stock attachment requires the board stock to be walked in to ensure positive contact between the board stock, adhesive and substrate. When using JM One-Step Foamable Adhesive, insulation boards must be set into the adhesive immediately and walked in due to the rapid curing time of the adhesive. Refer to the specific JM product data sheets of JM insulation adhesives listed above for coverage rates and specific application information.

When adhering insulation boards using hot asphalt, board size must be no greater than 4' x 4' (1.22 m x 1.22 m) If installing over an existing layer of insulation or in multiple layers, all joints must be offset a minimum of 6" (152 mm) between layers. Porous substrates may require greater amounts of asphalt. Concrete decks must be primed with Asphalt Primer prior to application of hot asphalt. Refer to the Insulation Installation Instructions document for further information.

Appropriate JM Insulation Fasteners Include:

- All Purpose Fasteners
- UltraFast Fasteners and Plates
- Structural Concrete Deck Fasteners and Plates
- Polymer Auger Fasteners

Install JM insulation Fasteners and Plates at an appropriate rate determined by building code, specification, and/or JM Guarantee requirements. Refer to the JM Minimum Insulation Fastening Requirements-Adhered Membrane bulletin for further information.

## Cover Board Application

Cover boards may be installed using asphalt, mechanical fasteners, or adhesives. A minimum offset of 6" (152 mm) is recommended from previous layers of insulation. No board widths less than 6" (152 mm) are allowed. Refer to the Invinso Roof Board Codes and Application Brochure for further information. Refer to the JM Cover Boards Selector Guide for JM Cover Boards product information. Refer to section Insulation Application above for Cover Board Securement Information including Adhered and Fastened methods of attachment.

## Asphalt Application

JM BUR, SBS modified bitumen and thermoplastic fleece back products are designed to be installed with hot asphalt. Permamp, coal tar pitch and coal tar asphalt are not permitted.

JM requires the use of approved asphalt within systems which require a JM Peak Advantage Guarantee. Asphalt should meet the requirements of ASTM D 312. JM guarantees require the use of approved asphalt. The slope of the roof as well as the climate governs the grade of asphalt to be used.

JM endorses the guidelines established by the NRCA and ARMA for heating asphalt for proper applications. Asphalt should be applied at the Equisviscous Temperature (EVT) +/- 25°F (+/- 4°C).

## Modified Bitumen Sheet Application - Hot Asphalt

On roof decks with slopes up to 1/2" per foot (41 mm/m), the roof felts may be installed either perpendicular or parallel to the roof incline. Install each felt so that it is firmly and uniformly set, without voids into the hot asphalt just before the felt at the proper nominal recommended rates. All sheet edges should be well sealed.

**SBS Application:** Starting with one of the base plies listed, install a 1/2" width ply first into a full moping of hot asphalt, then over that ply a full width ply with the remaining plies applied full width overlapping the preceding ply by 19" (483 mm) so that at least two plies cover the substrate at all locations.

**BUR Application:** Starting with one of the base plies listed, install a 1/2" width ply first into a full moping of hot asphalt, then over that ply a 3/8" width ply then over both plies a full width ply. The following plies are to be applied full width, overlapping the preceding plies by 24 3/8" (627 mm) so that at least three plies cover the substrate at all locations.

## Note:

Sheets with polyester reinforcement must be allowed to relax in an unrolled position prior to installation. Allow the membrane to relax for at least 15 minutes when the temperature is above 60°F (16°C), or 30 minutes when the temperature is below 60°F (16°C) prior to installation.

## Thermoplastic Membrane with Redundant Bituminous Systems Over Non-Nailable Decks.

These specifications are for use over any type of deck which is not nailable and which offers a suitable surface to receive the roof. Concrete decks require coating with JM Asphalt Primer prior to the application of hot asphalt. Pre-cast concrete panels also require a layer of approved roof insulation prior to installing a roof membrane. The thermoplastic fleece backed membrane must be firmly and uniformly placed into a full moping of hot asphalt without voids. Asphalt must not be applied to the selvage edge of the thermoplastic fleece backed membrane to allow a minimum of 1.5" (38 mm) weld. Before installation, unroll the JM TPO Fleece Backed membrane and allow it to relax. The laps of JM TPO Fleece Backed membrane must be hot air welded. Clean all surfaces to be welded. All laps must be a minimum of 1 1/2" (38 mm) in width.

JM TPO Fleece Backed membrane for hot asphalt application has a 8 oz. polyester fleece for staining protection against the asphalt. The membrane if furnished in 60 and 80 mil thickness and delivered in 10' widths.

## Steep Slope Requirements

Special procedures are required on inclines over 1/2" per foot (41 mm/m). Refer to the SBS Application Guide for further information.

## Re-Roofing

A large percentage of all commercial and industrial roofing pertains to re-roofing of existing buildings. Refer to the JM Re-Roofing document for inspection, testing, components and other valuable information pertaining to re-roofing projects.

## JM Guarantee Requirements

JM Peak Advantage<sup>®</sup> Guarantees are available up to a 25 year term with approved components and assembly make-up. Refer to the JM Peak Advantage Charges and Requirements-Bituminous Systems document for additional guarantee information.

Refer to the JM Peak Advantage Guarantee Information document for additional guarantee information and guidelines.

Refer to the JM Peak Advantage Guarantee Specimen document to see a JM Peak Advantage Guarantee sample.

All guaranteed installations must follow the guidelines for the requested guarantee as outlined in the SBS Modified Bitumen Specifications document. Not all JM specifications are eligible for all JM Peak Advantage Guarantee terms or enhanced coverage. Please contact JM Guarantee Services at (800) 922-5922 Option 3 for specific requirements.

All projects requiring a guarantee from JM must be applied for a minimum 14 days in advance of job start.

Refer to the Preventative Maintenance Brochure for roof and building maintenance guidelines.