

## Product Technical Bulletin **APM-4.5T**

### **BITUMEN-POLYMER WATERPROOFING MEMBRANE, MADE FROM SELECT APP AND DISTILLED BITUMEN, REINFORCED WITH SPUNBOND POLYESTER FABRIC.**

BITEC APM-4.5T is a torch applied, mineral surfaced, modified bitumen waterproofing membrane composed of carefully selected asphalts (bitumen) having superior modifying characteristics, blended with high quality polypropylene resins. APM-4.5T is reinforced with spunbond polyester fabric. APM-4.5T waterproofing membrane yields the following performance characteristics:

- ★ Impermeable to water
- ★ Low temp flexibility
- ★ Thermally stable
- ★ Excellent adhesion
- ★ Resistant to acids and most bases
- ★ Puncture resistant
- ★ Excellent workability
- ★ Longevity

Spunbond polyester fabric, used as a reinforcement in APM-4.5T has isotropic mechanical

properties giving the composite membrane similar mechanical characteristics in all angular directions in relation to the membrane surface. Spunbond polyester fabric imparts the following properties to the composite membrane:

- ★ High flexibility
- ★ Puncture resistance
- ★ High elongation
- ★ Mechanical strength
- ★ Fatigue resistance
- ★ Tear strength
- ★ Deterioration resistance
- ★ Dimensional stability

The mineral surface protects the membrane from aging caused from heat and ultra violet radiation. Most mineral surfacings yield sufficiently high amounts of solar reflectivity to realized some energy savings, depending on building construction and use. Some heat absorption values are given below, calculated on the basis of an ideal black surface as being 100%:

Ideal Black	100%
Bituminous Surface	94%
Gray Mineral	85%
Tan Mineral	57%
White Mineral	30%

APM-4.5T incorporates a smooth and even application of polyethylene film to prevent blocking of rolls and to provide a smooth, acceptable torching surface. Polyethylene burn-off film is contained on the torchable face of the roll. The polyethylene burn-off film acts as a "sight indicator" for the applicator in determining the proper flow needed to insure adequate bonding of plies and seams.

After installation of the roofing membrane is complete, the surface may be coated with a BITEC APPROVED ROOF COATING to increase the overall reflectivity of the system and/or fire rating. BITEC recommends that a period of at least 45 days elapse before roof coatings are applied. This will effectively allow the membrane to "cure" and accept the roof coating.

#### **PACKAGING**

Palletized units contain 20 rolls of APM-4.5T waterproofing membrane. Each unit is shrink wrapped in a special polyethylene bag for stability. BITEC recommends that units of material be single stacked.



## APPLICATION

Depending on the type of roof, APM-4.5T can be either fully adhered, spot or partially adhered, or loose laid. BITEC specifications applicable to this product should be consulted to determine which system should be employed. When applying the membrane, the polyethylene burn-off film should always be down facing the roof deck. Prior to application, the membrane should be unrolled completely, aligned and set before the actual heat welding of the membrane occurs. The membrane should then be rolled up half way, leaving the other half fully extended. (This will insure that the membrane will remain aligned during the heat welding process.)

Begin torching the burn-off film surface of the membrane, using a sweeping motion, maintaining even heating. The actual torching motion should be done in an "L" configuration, preheating the previously installed membrane lap, then sweeping across the roll face while advancing the roll over the roof surface. As the roll is advanced, a bead of modified bitumen should be seen flowing from between the lap seam a distance of  $\frac{1}{4}$  to  $\frac{3}{8}$ " from the membrane edge, which is being advanced. This "flow out" should be consistent and uninterrupted. Seams which are not fully bonded can be repaired by inserting a hot trowel between the affected seam and lightly torching. Upon removal of the hot trowel, pressure should be applied to the top ply, forcing the modified bitumen to flow out the desired distance.

All side and end laps should be a minimum of 4 inches and 6 inches respectively.

If the membrane is loose laid, an area of 40" each side of the end lap should be fully bonded to the roof surface.

BITEC APP MEMBRANES MAY NOT BE INSTALLED IN HOT ROOFING ASPHALT, COLD PROCESS ADHESIVES OR BY MECHANICAL ATTACHMENT.

BITEC APP MEMBRANES ARE NOT RECOMMENDED FOR USE OVER COAL TAR OR PITCH ROOFS UNLESS THE EXISTING DECK IS SEPARATED FROM THE BITEC MEMBRANE BY A MIN.  $\frac{1}{2}$ " THICK, MECHANICALLY ATTACHED RECOVER BOARD. BITEC DOES NOT ALLOW THE USE OF PLASTIC ROOFER'S CEMENT WITH ANY OF ITS MEMBRANES.

AS WITH ANY ROOFING PROJECT, GOOD ROOFING PRACTICES SHOULD ALWAYS BE FOLLOWED. CONSULT THE BITEC SPECIFICATION AND DETAILS BOOK FOR INFORMATION GOVERNING CERTAIN SYSTEMS.

## TOOLS REQUIRED

To apply BITEC APM-4.5T waterproofing membrane, the only tools needed are: a propane torch having a UL certified regulator, propane bottle, spatula or round nose roofer's trowel, a roofer's knife, pair of work gloves, flat soled shoes and an ABC dry chemical fire extinguisher.

BEFORE USING THIS PRODUCT, BE CERTAIN THAT ALL INFORMATION CONCERNING THE INSTALLATION OF THIS PRODUCT AND SAFETY GUIDELINES PERTAINING THERETO HAVE BEEN READ AND FULLY UNDERSTOOD THE APPLICATION OF MODIFIED MEMBRANES REQUIRES THE USE OF EXPLOSIVE GAS AND MOLTEN ASPHALTS, WHICH IF MISHANDLED CAN AND WILL CAUSE PERSONAL INJURY AND/OR PROPERTY

## SAFETY

### THE CONTRACTOR

It is the contractor's responsibility to observe all fire prevention policies and practices, to train, instruct and warn employees on the use of torching equipment. Follow OSHA and NRCA provisions for fire protection, including but not limited to those listed in OSHA 1962., 150., 151., 153., 1191-110 which apply to torch application. The contractor should be familiar with NFPA 58 "Standard for the Storage and Handling of Liquefied Petroleum Gas" and any other appropriate publications of the National LP Gas Association.

### FIRE DEPARTMENT REGULATIONS

The contractor should be familiar with all local fire codes in his area. The contractor is responsible for obtaining all necessary permits or certificates before any work is started.

### PERSONNEL

Proper clothing should be worn at all times while installing any modified membrane. Long sleeve shirt, long pants, leather or durable flat soled shoes and work gloves. Workmen, other than the torch operator, should be no closer than 3' from open flame.

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THE ROOFING CONTRACTOR AND HIS EMPLOYEES ARE THE KEY TO SUCCESS REGARDING SAFETY...  
SAFETY SHOULD ALWAYS BE FIRST!

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**SPECIFICATION:**  
**APM-4.5T.1**  
**NON-NAILABLE DECK**

If plans or specifications require installation of a modified bitumen membrane system over a non-nailable deck apply this specification (APM-4.5T.1).

Apply this system using the appropriate BITEC approved base flashing, metal flashing or wall covering as specified in the most current edition of the BITEC "Roofing Material Specification and Details" publication.

#### **SEC. 1.00 INSULATION**

The following insulations are acceptable for use with APM-4.5T:

- PERLITE
- GLASS FIBER
- POLYISOCYANURATE
- WOOD FIBER
- CELLULAR GLASS

#### **SEC. 2.00 CANTS**

Flashing details, where the transition is from the horizontal to a vertical surface, a non-combustible cant strip must be used.

#### **SEC. 3.00 BASE SHEET**

A minimum of one ply of fiberglass TYPE G2 base sheet must be installed over the insulation or deck before the membrane is heat welded.

#### **SEC. 4.00 FASTENERS**

Consult Factory Mutual Research Publications governing your geographical region, or FM J.I.OQ3A3.AM governing BITEC products and systems.

#### **SEC. 5.00 OUTLETS**

Drainage outlets shall be installed below the roof deck surface to permit POSITIVE DRAINAGE of the roof deck and

to prevent water ponding at the drain rim. Base ply should be evenly trimmed with the drain flange, followed with a 40" x 40" heat welded collar of BITEC APS-4T. This collar must extend into and be fully adhered to the interior of the drain flange and interior surface. The APM-4.5T membrane shall be fully adhered to the base ply, APS-4T flashing collar and extend into the drain. Clamp ring should be installed and tightened while the membrane is hot. A 4 lb. lead or 16 oz. copper flashing is optional between the collar and the APM-4.5T field membrane. APS-4T collar should extend 4" beyond the lead or copper flashing.

#### **SEC. 6.00 PIPE FLASHING**

Where penetrations occur in the roof surface a collar of APS-4T should be installed over the base ply extending a minimum of 4" beyond the flanges. A metal flashing shall be installed having a continuous flange 4" minimum, on top of the APS-4T collar. (On nailable decks, the metal flange must be nailed 3" o.c., <sup>3</sup>/<sub>4</sub>" from the perimeter.)

ALL METAL FLASHINGS MUST BE PRIMED WITH AN ASPHALT PRIMER AND ALLOWED TO DRY BEFORE MEMBRANE AND FLASHINGS ARE INSTALLED.

The APM-4.5T field membrane must be fully adhered to the APS-4T collar and metal flange. All seams must be troweled and filled with molten modified bitumen.

#### **SEC. 7.00 ROOF DECK**

The roof deck must be smooth, dry, clean and free of sharp projections and depressions, and properly graded to outlets.

THE ROOFING CONTRACTOR, ARCHITECT, AND ENGINEER MUST ALLOW FOR POSITIVE DRAINAGE WHEN DESIGNING THE ROOF DECK OR ROOF SYSTEM. BITEC DEFINES

POSITIVE DRAINAGE AS: ROOF DECK BECOMES DEVOID OF WATER WITHIN 72 HOURS AFTER LIQUID PRECIPITATION HAS OCCURRED. BITEC WILL NOT BE RESPONSIBLE FOR MEMBRANE DAMAGE AS A RESULT OF INADEQUATE ROOF DECK DRAINAGE.

#### **SEC. 8.00 FINAL SURFACING**

As an option, any BITEC APPROVED ROOF COATING can be applied to the finished membrane system.

BITEC RECOMMENDS THAT A PERIOD OF AT LEAST 45 DAYS ELAPSE BEFORE ROOF COATING IS APPLIED. (ROOF COATING MAY BE NECESSARY TO COMPLY WITH U.L. OR F.M. SYSTEM REQUIREMENTS.)

BITEC WILL NOT COVER MEMBRANE DAMAGE OR FAILURE OF ANY ROOF SYSTEM, RESULTING FROM COATINGS FROM ANOTHER MANUFACTURER.

#### **\*\*\*\*\* WARRANTIES \*\*\*\*\***

BITEC, INC.

offers two warranties:

(1) 10-YR. MATERIAL ONLY

(2) 10-YR. LIMITED "INSURED" ROOFING WARRANTY\*

In order to obtain warranty (2), which covers labor and materials, an AUTHORIZED BITEC APPLICATOR must install the roofing system. A small warranty fee is assessed if the system is not coated or does not have a factory installed mineral surface. Final inspection by a BITEC FIELD REPRESENTATIVE is necessary before issuance of warranty. Information regarding BITEC warranties may be obtained from: MANAGER OF TECHNICAL SERVICES by calling 800-535-8597.

\*Extended warranty periods are available, 12, 15 and 20 years.

SOME SYSTEM DETAILS  
ARE PROVIDED ON  
THE BACK PAGE.

**SPECIFICATION:**  
**APM-4.5T.2**  
**NAILABLE DECK**

If plans or specifications require installation of a modified bitumen membrane system over a nailable deck apply this specification (APM-4.5T.2).

Apply this system using the appropriate BITEC approved base flashing, metal flashing or wall covering as specified in the most current edition of the BITEC "Roofing Material Specification and Details" publication.

### **SEC. 1.00 INSULATION**

The following insulations are acceptable for use with APM-4.5T:

- PERLITE
- GLASS FIBER
- POLYISOCYANURATE
- WOOD FIBER
- CELLULAR GLASS

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### **SEC. 3.00 BASE SHEET**

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### **SEC. 5.00 OUTLETS**

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to prevent water ponding at rim. Base ply should be evenly trimmed with the drain flange, followed with a 40" x 40" heat welded collar of BITEC APS-4T. This collar must extend into and be fully adhered to the interior of the drain flange and interior surface. The APM-4T membrane shall be fully adhered to the base ply, APS-4T flashing collar and extend into the drain. Clamp ring shall be installed while the membrane is still hot. A 4 lb. lead or 16 oz. copper flashing is optional between the collar and the APM-4.5T field membrane. APS-4T collar should extend 4 inches beyond the lead or copper flashing.

### **SEC. 6.00 PIPE FLASHING**

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ALL METAL FLASHINGS MUST BE PRIMED WITH AN ASPHALT PRIMER AND ALLOWED TO DRY BEFORE MEMBRANE AND FLASHINGS ARE INSTALLED.

The APM-4.5T field membrane must be fully adhered to the APS-4T collar and metal flange. All seams must be troweled and filled with molten modified bitumen.

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The roof deck must be smooth, dry, clean and free of sharp projections and depressions, and properly graded to outlets.

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## TECHNICAL SCHEDULE

**APM-4.5T ROLLS ARE 1 METER WIDE AND 25.58 FEET IN LENGTH.  
FLASHING ROLLS ARE AVAILABLE IN HALF AND QUARTER WIDTHS.**

APPROVALS	UL (R13231)	
SOFTENING POINT (ASTM D-36)	302°F (150°C)	
REINFORCEMENT	spunbond polyester fabric	
PENETRATION (ASTM D5)	30 dmm @ 25°C	
SLIDE (UNI-8202)	<1 mm	
COLD FLEXIBILITY (UNI-8202)	passed +5°F (-15°C)	
WATER TIGHTNESS (CGSB 37-GP-56M)	passed	
DYNAMIC PUNCTURE (CGSB 37-GP-56M)	passed	
STATIC PUNCTURE (CGSB 37-GP-56M)	passed	
TENSILE STRENGTH (ASTM D-412)	MD = 100 lbf/in	XMD = 70 lbf/in
ELONGATION (ASTM D412)	MD = 50%	XMD = 55%
LOAD STRAIN PRODUCT (CGSB 37-GP-56M)	MD = 44,482 n	XMD = 34,251 n
THICKNESS	4.5 mm	
ROLL WEIGHT, APPROX.	92 lbs	
COVERAGE, INSTALLED APPROX.	75 ft <sup>2</sup>	
TOTAL SURFACE AREA, APPROX.	86.4 ft <sup>2</sup>	

All Information is given in good faith, but normal tolerances of manufacture and testing will apply. BITEC reserves the right to improve and change its products at any time without prior notice or advice. The use of BITEC products is determined by local conditions and indi-

vidual requirements of each contract. In consideration of the many factors involved, BITEC cannot be held responsible for the application of its products and for conditions beyond its control. All claims filed against BITEC warranties will be subject to the provisions set forth

at the date of warranty issuance, and any addendums thereto. Under no circumstances will BITEC be held liable for any damage, whether personal injury or property damage, which occur during or after the application of the membrane.

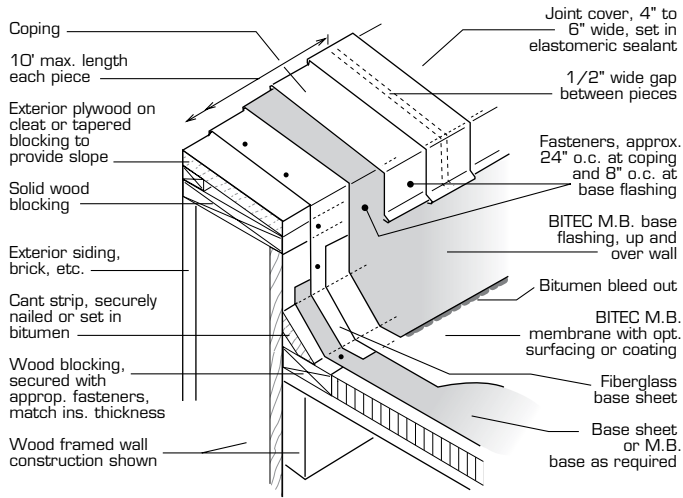
*For more information concerning this and other fine BITEC products,*

**CALL 1-800-535-8597**

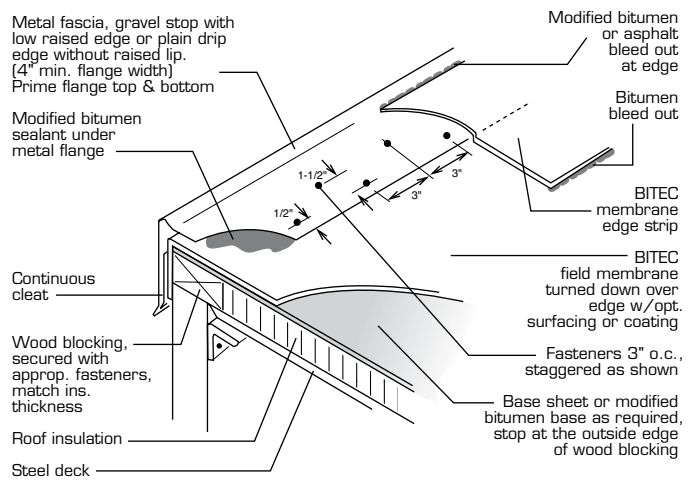
*Ask for Manager, Technical Services*



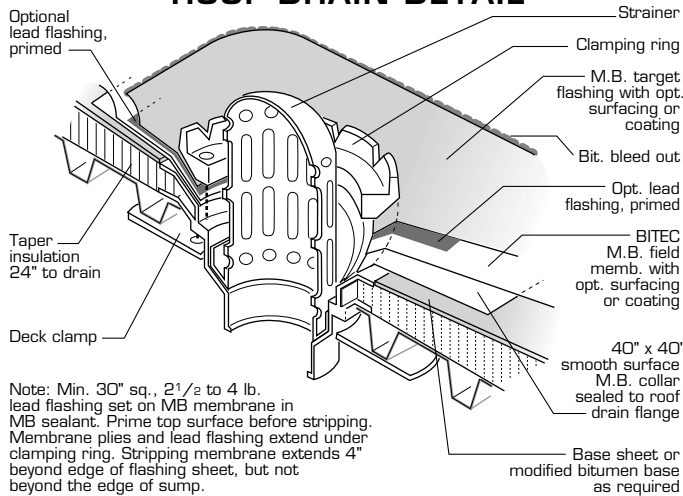
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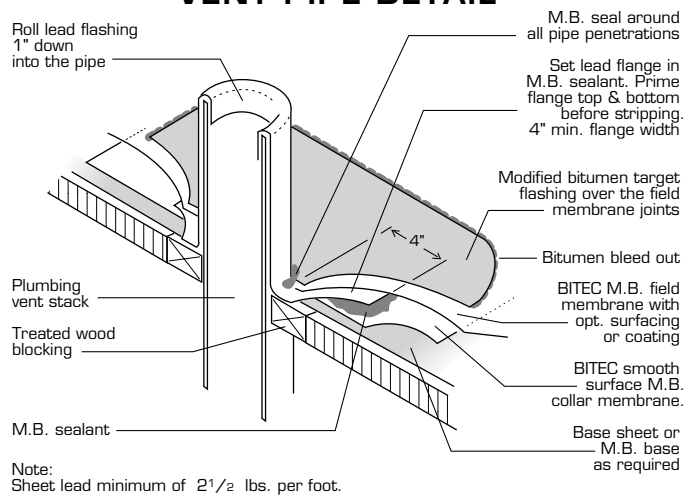
## EDGE DETAIL



## ROOF DRAIN DETAIL



## VENT PIPE DETAIL



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APPROVALS:



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Underwriters Laboratories, Inc.  
As to an external fire exposure only  
49S8

R-13231

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