SECTION 6

MULE-HIDE PRODUCTS CO., INC.

PVC
Technical Bulletins

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PLEASE CONSULT THE MULE-HIDE WEBSITE FOR THE MOST CURRENT INFORMATION

Mule-Hide Technical Bulletin
PVC FA01-2006

(Revised Feb 2009)

Issued January 1, 2006

Membrane and Insulation Fastener Spacing Requirements - Fully Adhered Systems

Membrane Attachment:

A. PVC membrane attachment at the base of all walls, parapet walls, curbs and penetrations unless otherwise specified in the published details shall be 12" o.c. using the Mule-Hide HD Fastener and 2" Seam Plate or HD Seam Plate(2.4" dia.). This is based on attachment into the deck. Vertical attachment at the base of vertical surfaces shall be as specified in the published details.

B. Fasteners installed in steel decks and plywood decks must penetrate through the deck a minimum 1/2 inch. Fasteners installed in wood plank decks must penetrate into the deck a minimum of 1-1/2 inches. Fasteners installed into concrete decks must penetrate into the deck a minimum of 1 inch. **Contact Mule-Hide for specific fastener type needed for attachment of the insulation and membrane into various deck types.**

C. Mechanical attachment of the membrane in the field is not required for fully adhered roofing systems. The membrane is adhered directly to the approved insulation, cover board or other approved substrate.

Insulation Attachment:

A. Mule-Hide minimum standard insulation attachments: Individual project requirements may require more fasteners per sheet size than what is listed below. It is the contractor's sole responsibility to ensure the system being installed is in compliance with the State and local building code.

1. For approved insulation measuring 2' x 4', the minimum attachment is 4 fasteners per board.
2. For approved insulation measuring 4' x 4', the minimum attachment is 8 fasteners per board.
3. For approved insulation measuring 4' x 8', the minimum attachment is 16 fasteners per board for boards up to 2" thick.
4. For approved polyisocyanurate insulation measuring 4' x 8', the minimum attachment is 8 fasteners per board for boards 2 inches thick or greater in the field of the roof. In wind zones designated by the IBC as being greater than 90 mph, increased attachment in the perimeter (50%) and corners (100%) shall be required. Local building code requirements shall supercede these minimums.
5. When using multiple layers of insulation or combining different board types, the thickness of the top layer and type of insulation determines the minimum number of fasteners required.

C. Buildings higher than 60 feet, located in high wind zones, located along the coastline, or projects that request wind coverage greater than that specified in the warranty (peak gust to 55 mph) shall require increased attachment rates. Contact Mule-Hide Technical Department prior to bidding projects with these requirements for project specific fastener rates.

D. Mule-Hide defines the minimum perimeter area as 8' in from the roof edge along all exterior roof edges.

E. Those contractors wishing to install a roof system following Factory Mutual guidelines for projects not requiring FM compliance. The perimeter areas shall have an increase of fasteners of 50% and the corner areas shall have an increase of 100%. The perimeter is defined by the lesser of the following calculations:

1. 0.1 x the lesser plan dimension (building width) =

   or

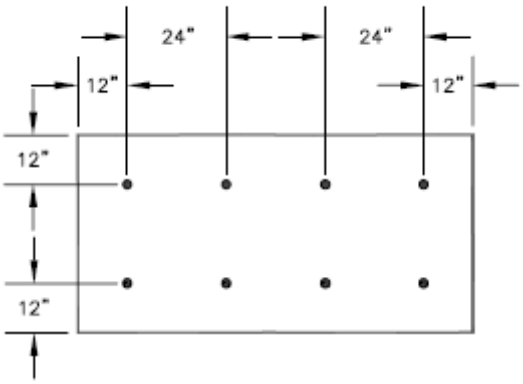
2. 0.4 x the height of the building =

Contact Mule-Hide Technical Department for attachments that require compliance with Factory Mutual (FM) requirements. Requirements change with deck types, building locations, roof heights, insulation used, etc..

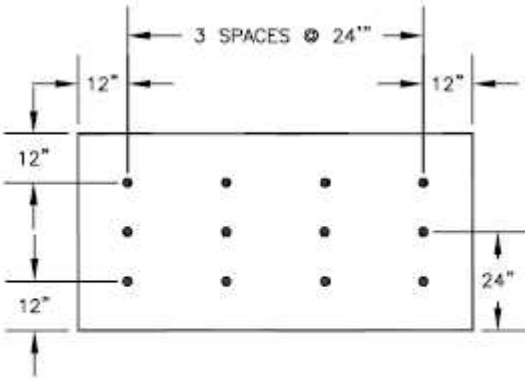
Mule-Hide Technical Bulletin
PVC FA01-2006

Illustration 1, Typical Fastener layouts for 4' x 8' Boards

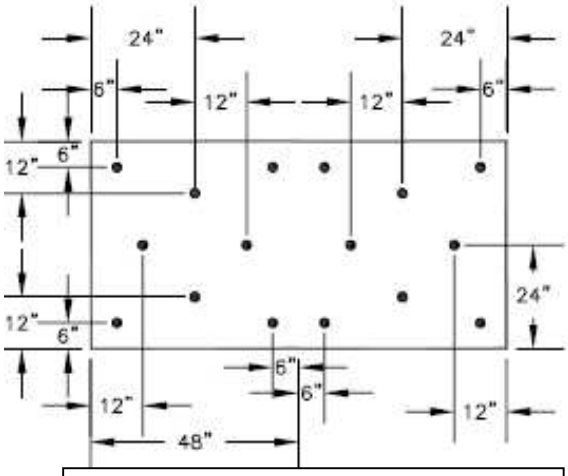
Fully Adhered



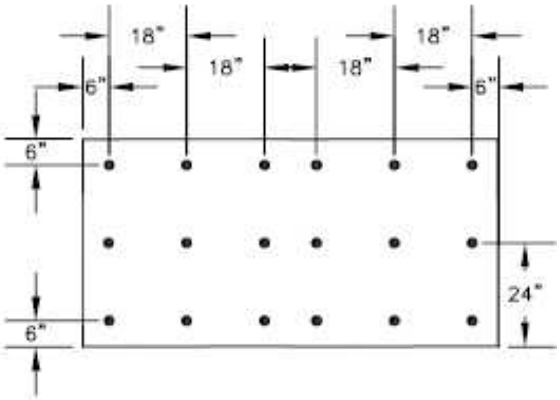
8 Fasteners per 4 ' x 8' board



12 Fasteners per 4 ' x 8' board



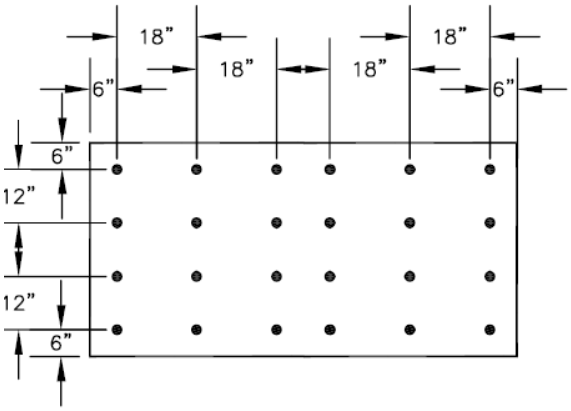
16 Fasteners per 4 ' x 8' board



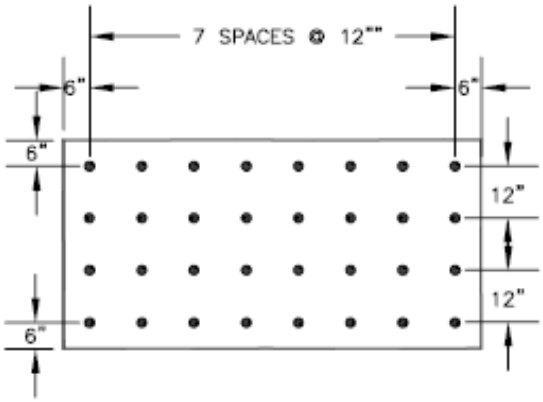
18 Fasteners per 4 ' x 8' board

Illustration 1, Typical Fastener layouts for 4' x 8' Boards

Fully Adhered



24 Fasteners per 4 ' x 8' board



32 Fasteners per 4 ' x 8' board

Note: See attached details MHFM-208, MHFM-212, and MHFM-216 for examples of Factory Mutual attachment patterns.

Due to new changes in the FM Global Property Loss Prevention Data Sheet 1-29, new requirements for perimeter and corner attachments are in effect as of January, 2006. The new requirements cause substantial changes to fully adhered systems. To summarize the changes, for those systems requiring FM 1-90 compliance or greater shall be handled in one of two methods.

Due to new changes in the FM Global Property Loss Prevention Data Sheet 1-29, new requirements for perimeter and corner attachments are in effect as of January, 2006. The new requirements cause substantial changes to fully adhered systems. To summarize the changes, for those systems requiring FM 1-90 compliance or greater shall be handled in one of two methods.

New FM Guidelines (per FM 1-29)

Prior to January 2006, based on tested assemblies, FM permitted increasing the number of fasteners required in the perimeter and corner areas by 50% and 75% respectively.

As of January 2006, for those tested assemblies with ratings of 1-75 or less, increase of the number of fasteners is still acceptable but with the following changes:

For FM ratings of 1-75 or less:

Perimeter Areas require 50% more than the number tested in the field, but at least 1 fastener per 2 sf (this is a minimum of 16 fasteners per 4' x 8' board).

Corner Areas require 100% more than the number tested in the field, but at least 1 fastener per 1 sf (this is a minimum of 32 fasteners per 4' x 8' board).

For FM ratings of 1-90 or greater:

There are two acceptable methods to address the perimeter and corner areas on adhered systems utilizing mechanically attached insulations. This also includes multiple layers of insulation where the bottom layer is mechanically attached and subsequent layers are attached with adhesive.

Method 1
Install the field of the roof fully adhered with the required rating. Install the perimeter and corner areas with a fully adhered assembly that meets the uplift ratings as specified in Table 1 on page 5 of the FM Data sheet 1-29.

Example: All areas fully adhered

An FM 1-90 rating requires a 1-90 tested assembly to be used in the field of the roof, a 1-150 tested assembly in the perimeter areas and a 1-225 tested assembly in the corners.

Method 2
Install the field of the roof fully adhered with the required rating. Install the perimeter and corner areas with a mechanically attached assembly following the guidelines specified in Section 2.2.7.2 of 1-29 which is the same as the previous publication of 1-29.

Example: Field is fully adhered while perimeters and corners are mechanically attached base on an equivalent rating.

Assuming the field rating for the fully adhered assembly is 1-90, the perimeter and corner layouts and attachments are determined using any mechanically attached assembly that has passed an FM 1-90 rating.

Assume a 9-1/2' row to row spacing (using a 10' wide membrane) with fasteners spaced 6" on center has passed an FM 1-90. The perimeter row-to-row spacing will be 60% of the tested spacing or a maximum of 5.7'. The corner row-to-row spacing will be 40% of the tested spacing or a maximum of 3.8'. All fastener spacing in the rows will remain at 6" on center.

The membrane may be adhered across the entire roof area, with mechanical attachments in the perimeter and corner areas through the top of the membrane. The spacing of the attachment and the fastener spacing must be based on a tested mechanically attached assembly.

Note: FM 1-29 requirements for perimeter and corner attachment for adhered assemblies that utilize hot asphalt or cold adhesive for attachment of all insulation layers have not changed.

FM's January 2006 Loss Prevention Data Sheet 1-29 is available from FM Global. Be sure to review this document and contact Mule-Hide for assembly configurations prior to starting or bidding any projects requiring FM compliance.

Always consult the Mule-Hide web site at www.mulehide.com for updates and most current information.

Technical Bulletin

PVC GN01-2008

September 5, 2008

20-Year Warranty Enhancements - All Systems

As of September 1, 2008 Mule-Hide will permit the use of Mule-Hide 60-mil or 80-mil, reinforced PVC membrane for their 20-year Warranty Program. This includes the following warranties:

- Roofing Membrane Limited Warranty
- Standard System Warranty
- Premium System Warranty

All other specifications, details, and 20-year warranty enhancements must be followed.

Always check the Mule-Hide Website (www.mulehide.com) for the latest information that may not have been available at the time of this printing.

"The name trusted in roofing since 1906"
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1195 Prince Hall Dr.
Beloit, WI 53511-5481

608-365-3111 • Fax: 608-365-7852 • www.mulehide.com

P.O. Box 1057
Beloit, WI 53512-1057

Technical Bulletin

No. 10-01

Attaching flashings to pre-painted metal

June 16, 2010

Most pre-finished metal surfaces are very slick and difficult to adhere to. The best results are obtained when the top (mating) surface of the pre-painted metal is abraded or scuffed up. This can be accomplished using a hand drill with a wire wheel, or by using steel wool.

The proper steps for bonding to pre-finished metal are as follows:

1. Verify that the metal is properly secured in place.
2. Abrade or scuff up the area to be bonded. *Caution* - Do not abrade the metal surface beyond the area to be bonded. Leaving abraded surfaces exposed to the elements may result in premature aging.
3. Prime the surface to be bonded (Tape primers for Single-Ply membranes, ASTM D-41 Asphalt primer for SAMB membranes and asphalt products.
4. Bond the membrane to the primed surface following an approved Mule-Hide Detail.

Please visit our website at www.mulehide.com or contact Mule-Hide Products at (608) 365-3111 for questions or additional information.

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Beloit, WI 53511-5481

608-365-3111 • Fax: 608-365-7852 • www.mulehide.com

P.O. Box 1057
Beloit, WI 53512-1057

Technical Bulletin
No. 10-03

Use of Pactiv GreenGuard Roof Insulation In Mule-Hide Roofing Systems

October 22, 2010
Revised July-2013

Pactiv offers several roof insulations that may be used in Mule-Hide roofing systems. The Pactiv insulation is an extruded polystyrene product and care must be taken when using this material over coal tar pitch. The following is a brief summary of how these insulations may be utilized in a Mule-Hide system.

Insulation	**Sizes**
PB6 Series	Supplied as fanfold bundles, 4' x 50', 3/8" thick
PB38 Series	Supplied as 4' x 8' sheets, 3/8" thick

Warranties – Pactiv insulations may be used for Standard 10, 15, or 20 year warranties when following our guidelines and Pactiv recommendations. (Not for use with Mule-Hide Premium Warranties)

Ballasted Systems

Membrane	Insulation	Installation
EPDM TPO	PB6, PB6FA or PB6FA90	Loosely laid in place*
	PB38, PB38FA or PB38FA90	
PVC	NONE	Ballasting not permitted

*Note: Insulation may be spot attached with adhesive to facilitate installation. Mechanical attachment of insulation is not allowed under a ballasted system.

Mechanically Attached Systems

Membrane	Insulation	**Attachment** (Min fasteners required) (4)
TPO(1) (Light Colored)	PB6, PB6FA or PB6FA90	**NON FM – 1** per 12 sq. ft. – Fig 2
		2 per 2' x 4' panel – FM pattern - Fig 3
	PB38, PB38FA or PB38FA90	**4** per 4' x 8' board – FM pattern – Fig 1
EPDM(2) (Dark Colored)	PB6, PB6FA or PB6FA90	**3** per 2' x 4' panel – FM pattern – Fig 5
	PB38, PB38FA or PB38FA90	**8** per 4' x 8' board – FM pattern – Fig 4
PVC(3) (Light Colored)	PB6W	**NON FM – 1** per 12 sq. ft. – Fig 2
		2 per 2' x 4' panel – FM pattern - Fig 3

(1) TPO (White, Tan, Gray)
(2) Reinforced EPDM
(3) PVC (White, Tan, Gray)
(4) See fastening patterns attached to this Tech Bulletin.

MULE-HIDE PRODUCTS CO., INC.

1195 Prince Hall Dr.
Beloit, WI 53511-5481

608-365-3111 • Fax: 608-365-7852 • www.mulehide.com

P.O. Box 1057
Beloit, WI 53512-1057

Fully Adhered Systems

Pactiv FA and FA90 products have a special facer that allows certain membranes to be adhered to them.

Insulation	Uplift[5] (MDP)	Insulation Attachment			
		Field	**Perimeter**	**Corner**	**Detail[6]**
PB6FA – fanfold	FM 1-60	4 per 2' x 4'	6 per 2' x 4'	8 per 2' x 4'	Fig 5
PB38FA – 4' x 8'	(-30 psf)	16 per 4' x 8'	24 per 4' x 8'	32 per 4' x 8'	MHFM-216
PB6FA90 - fanfold	FM 1-90	3 per 2' x 4'	5 per 2' x 4'	8 per 2' x 4'	Fig 7
PB38FA90 – 4' x 8'	(-45 psf)	12 per 4' x 8'	18 per 4' x 8'	32 per 4' x 8'	MHFM-212

(5) The maximum attainable wind classification under the ANSI/FM 4474 Appendix C test procedure. ANSI/FM 4474, associated FM Loss Prevention Data Sheets and building codes require a 2 to 1 margin of safety be applied to the windstorm classification for comparison to roof cladding design pressures. The maximum design pressures associated with these assemblies are:

FM 1-90 = -45 psf (maximum design pressure)
FM 1-60 = -30 psf (maximum design pressure)

(6) See fastening patterns attached to this Tech Bulletin.

Membrane	Adhesives
EPDM	Solvent Based Bonding Adhesive Low VOC Bonding Adhesive (**Not** for use with Acrylic Water Based Bonding Adhesive) [7]
TPO	TPO Bonding Adhesive Low VOC Bonding Adhesive (**Not** for use with WBBA-2000 Adhesive) [7]
PVC	**Not** approved at this time

(7) These adhesives have not been tested with Pactiv Insulation.

Follow GreenGuard application instructions, available at www.green-guard.com

Always check with local code bodies to ensure that this assembly meets local building code requirements. Not for use in high wind uplift areas. Contact Mule-Hide Technical Department for additional information.

Any information given on this Technical Bulletin is subject to change without notice. Please visit our website at www.mulehide.com or contact Mule-Hide Products at (608) 365-3111 for questions or additional information.

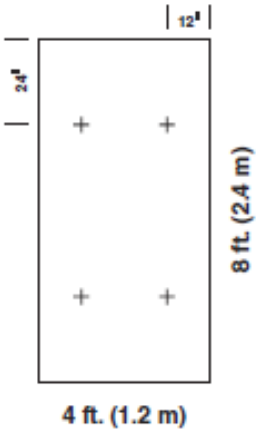


Figure 1
Fastening Pattern
For Sheets

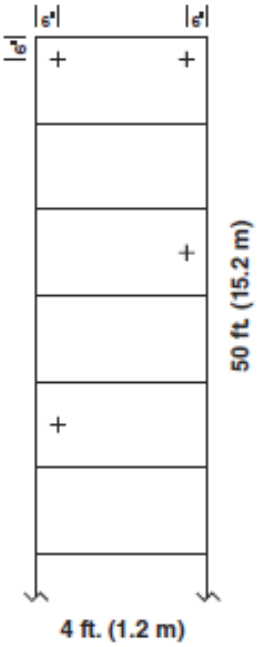


Figure 2
Fastening Pattern
For Fanfold Products

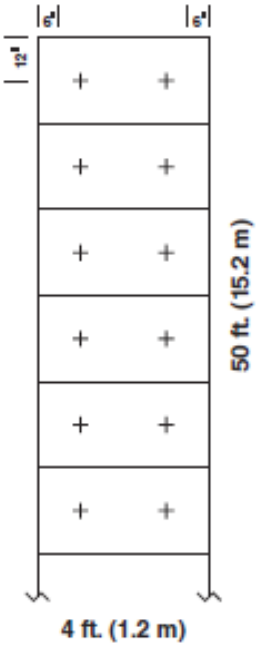


Figure 3
Fastening Pattern
For FM Approvals Jobs

Fastening Patterns for GreenGuard* Roofing Recovery Boards Used Under Light-Colored Roof Membranes

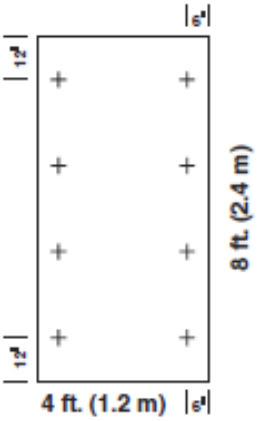


Figure 4
Fastening Pattern
For Sheets

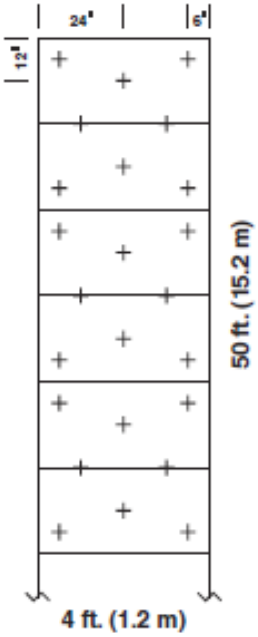
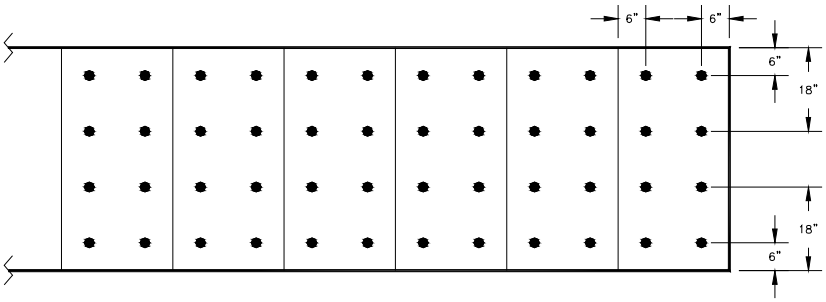
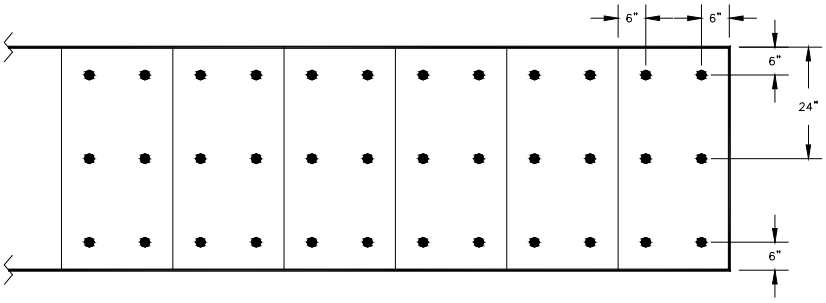


Figure 5
Fastening Pattern
For Fanfold Products

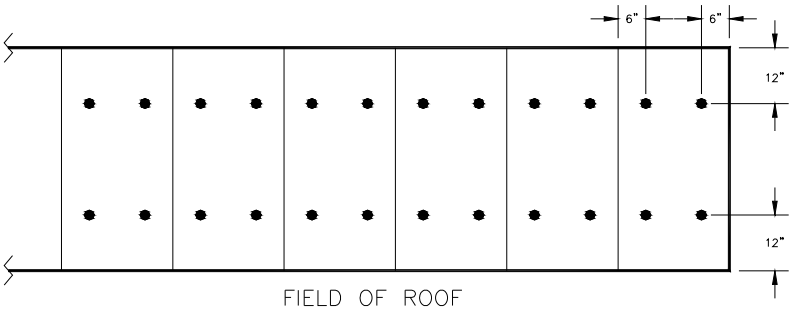
Fastening Patterns for GreenGuard* Roofing Recovery Boards Used Under Dark-Colored Roof Membranes



CORNERS



PERIMETERS

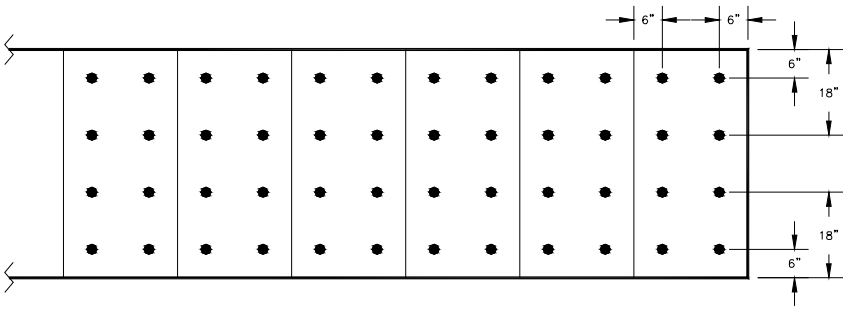


FIELD OF ROOF

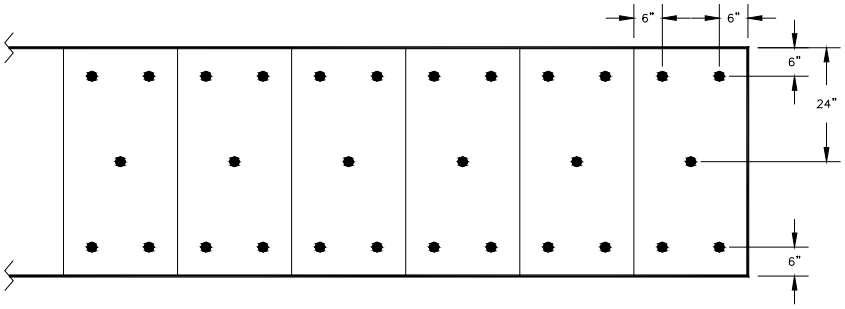
Figure 6

4' X 50' PB6FA FANFOLD INSULATION

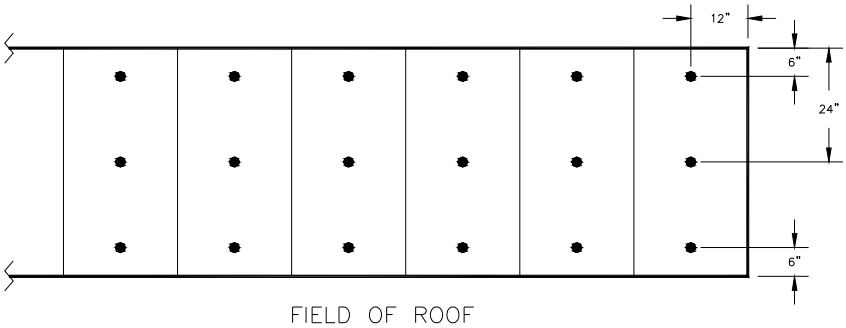
FASTENING PATTERN FOR GREENGARD® PB6FA ROOFING RECOVERY BOARDS USED UNDER FULLY ADHERED ROOF MEMBRANES TO ACHEIVE FM I-60



CORNERS



PERIMETERS



FIELD OF ROOF

Figure 7

4' X 50' PB6FA90 FANFOLD INSULATION

FASTENING PATTERN FOR GREENGARD® PB6FA90 ROOFING RECOVERY BOARDS USED UNDER FULLY ADHERED ROOF MEMBRANES TO ACHEIVE FM I-90

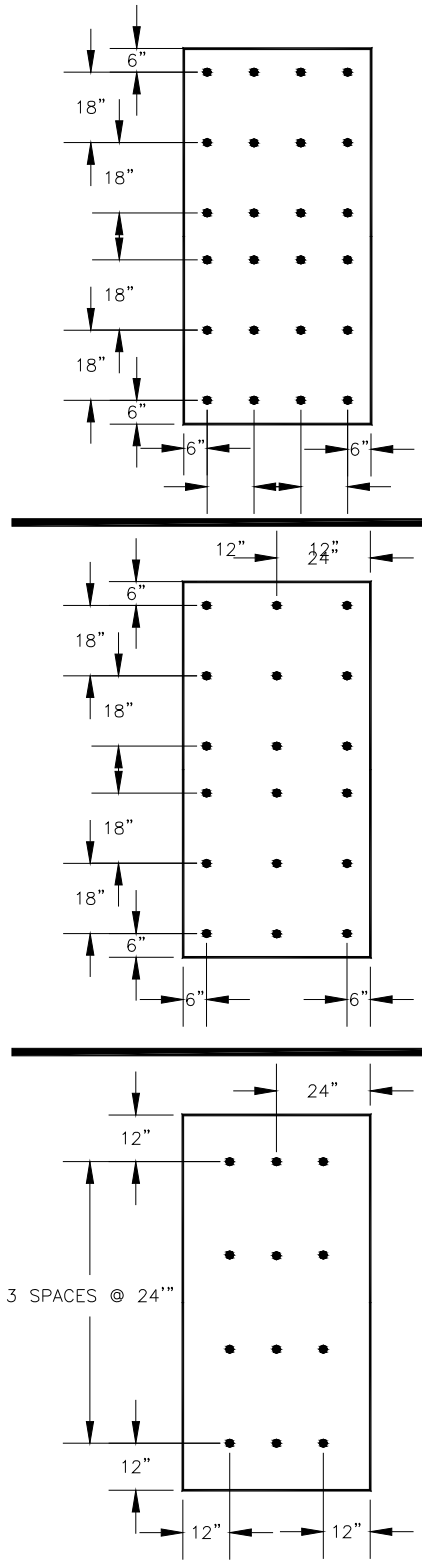
NOTES:

1. DETAILS TO BE USED IN CONJUNCTION WITH STANDARD GUIDE SPECIFCIATIONS CONTAINING REQUIREMENTS FOR NAILERS, INSULATION, SLIPSHEETS, ETC.

2. MULE-HIDE INSULATION FASTENERS AND 3" DIAMETER PLATES MUST BE USED FOR INSULATION ATTACHMENT.

3. REFER TO MULE-HIDE WIND UPLIFT RATINGS FOR APPROPRIATE FASTENER DENSITY REQUIRED.

4. FASTENER DENSITY INCREASES BASED ON 50% FOR PERIMETERS AND 100% FOR CORNERS.



FM - 12 FIELD FASTENERS
PER 4' X 8' BOARD PATTERN LAYOUT

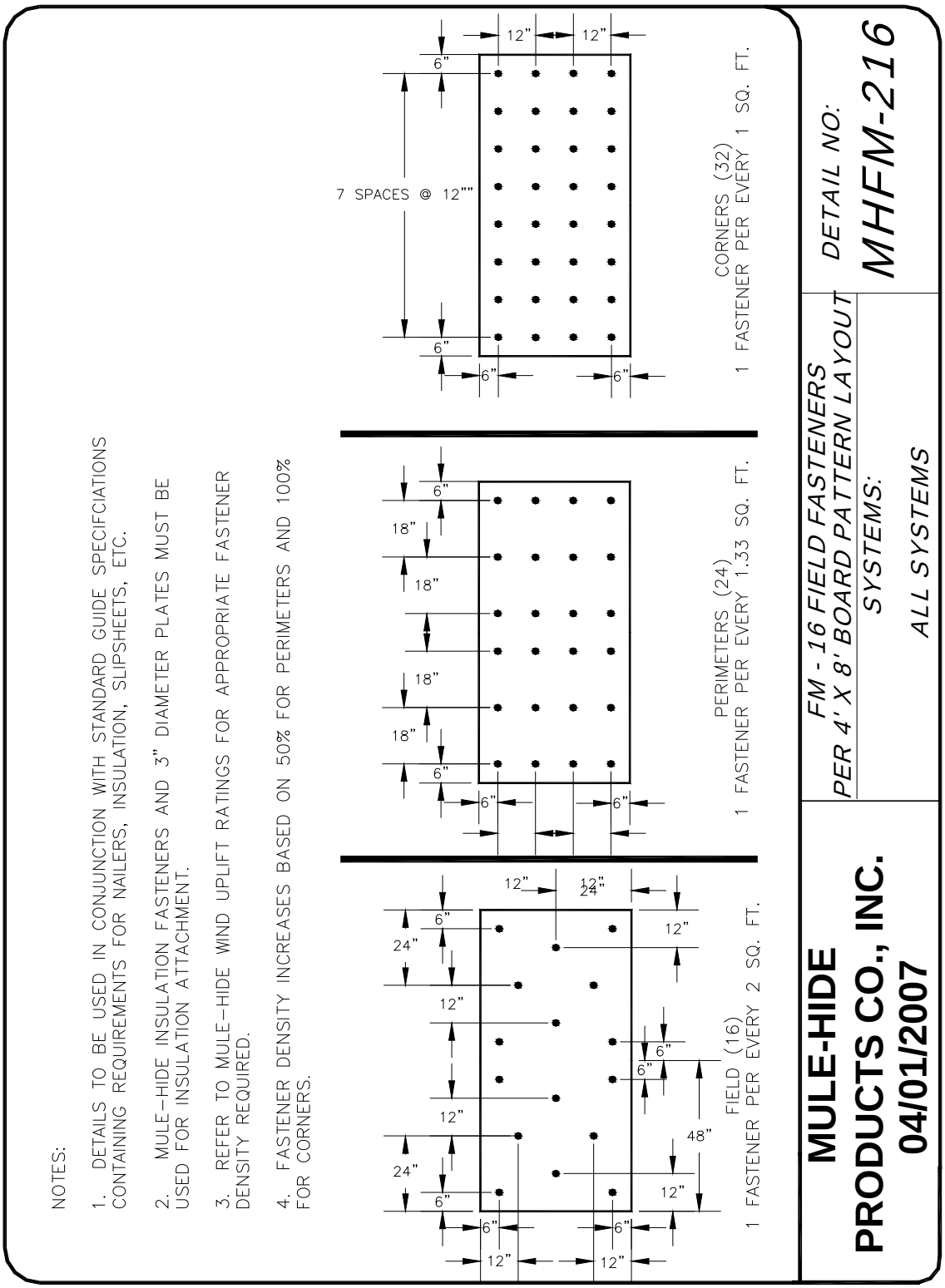
SYSTEMS:

ALL SYSTEMS

DETAIL NO:

MHFM-212

MULE-HIDE PRODUCTS CO., INC.
04/01/2007


NOTES:
1. DETAILS TO BE USED IN CONJUNCTION WITH STANDARD GUIDE SPECIFCIATIONS CONTAINING REQUIREMENTS FOR NAILERS, INSULATION, SLIPSHEETS, ETC.
2. MULE-HIDE INSULATION FASTENERS AND 3" DIAMETER PLATES MUST BE USED FOR INSULATION ATTACHMENT.
3. REFER TO MULE-HIDE WIND UPLIFT RATINGS FOR APPROPRIATE FASTENER DENSITY REQUIRED.
4. FASTENER DENSITY INCREASES BASED ON 50% FOR PERIMETERS AND 100% FOR CORNERS.
7 SPACES @ 12""
CORNERS (32)
1 FASTENER PER EVERY 1 SQ. FT.
PERIMETERS (24)
1 FASTENER PER EVERY 1.33 SQ. FT.
FIELD (16)
1 FASTENER PER EVERY 2 SQ. FT.
DETAIL NO:
MHFM-216
FM - 16 FIELD FASTENERS
PER 4' X 8' BOARD PATTERN LAYOUT
SYSTEMS:
ALL SYSTEMS
MULE-HIDE
PRODUCTS CO., INC.
04/01/2007

Technical Bulletin
No. 1101

Mule-Hide Membranes and Adhesives - Cold Weather Installation

Revised April-2012

During periods of cold weather, special storage and application methods must be used to facilitate the installation of our roofing materials. For best results, roofing materials should be stored between 60ºF and 80ºF prior to application. As the products cool and the properties and application deteriorate, restore products to room temperature.

Listed below are some tips for installing single ply membranes during periods of cold weather (40ºF or less). As a rule, roofing materials become stiffer and more difficult to work with as temperatures decrease. Proper storage and installation of all your roofing materials is crucial to the successful outcome of your project.

EPDM – EPDM membrane is available in large sheet sizes that are folded. During periods of cold weather, these folded sheets are more difficult to relax and install. Mule-Hide recommends the use of smaller, non-folded sheets for installation during cold weather. Allow extra time for the sheet to relax during colder weather.

EPDM flashing products may require supplemental warming from a heat gun. Be careful to keep the heat gun away from flammable materials such as cleaners, tape primers and adhesives.

TPO & PVC – Remove the outer wrapping and un-roll the membrane. Flip the membrane over so that the back side is up, facing the sunlight. This will allow the darker, back side of the membrane to absorb warmth from the sun while relaxing. Only un-wrap as much material as will be used during that day. Allow extra time for the sheet to relax.

Welding techniques and parameters must also be adjusted for cold weather applications. In general, welding speeds need to be decreased. It is imperative that test welds be conducted at start up and after the automatic welder has been shut down to assure that a proper weld is being made. It is also important to conduct test welds with hand welders also, due to the slower speeds needed to affect a proper weld.

SAMB (Self Adhering Modified Bitumen) - In order to perform properly, Mule-Hide SAMB materials require a minimum application temperature of 40°F and rising for 48 continuous hours. This applies to the roofing materials and approved substrate. During installation, the membrane must be promptly rolled with a minimum 75# roller. Failure to abide by these requirements may result in poor adhesion or cracking issues. During periods of colder weather, the Mule-Hide SAMB materials should always be stored at room temperature (60° to 80° F) until just prior to use. Materials that are not stored at room temperature (or not used within 4 hours) should be restored to room temperature prior to use.

Adhesives & Sealants

Acrylic Water Based Bonding Adhesive & WBBA-2000

Water based adhesives must not be allowed to freeze either during storage or application. These adhesives must be stored in original unopened containers at temperatures between 60ºF and 90ºF prior to application. In general, these products should be installed when temperatures are 45ºF and above and must not be allowed to freeze within a minimum of 48 hours of application. Once subjected to freezing temperatures the product will not perform and must be disposed off. Consult the appropriate Product Data Sheets for specific information on the adhesive being installed.

Mule-Hide Bonding Adhesive (EPDM), Mule-Hide TPO Bonding Adhesive, Mule-Hide PVC Bonding Adhesive, Low-VOC Bonding Adhesive, Low-VOC PVC Bonding Adhesive, Low-VOC Bonding Adhesive 1168 (CA only)

Solvent based adhesive and sealants must be stored in original unopened containers at temperatures between 60ºF and 90ºF for 24 hours prior to use. Storage at temperatures over 90ºF may alter product shelf life. Mix product thoroughly until all settled pigments are dispersed and adhesive is uniform in color. Mule-Hide recommends a minimum of 5 minutes of stirring with a variable speed drill and mixing paddle. Products stored at cold temperatures and then restored to room temperatures may experience separation of solvents. Always remix products thoroughly prior to use.

Working in low temperatures will also result in longer drying times for solvent based products. Failure to allow the products to properly flash off will result in solvent blistering of the membrane. To determine when the adhesive or primer has flashed off, form a fist and press your knuckles into the surface and give your wrist a quarter turn and lift. If surface is tacky but does not string, the surfaces are ready to mate together.

In addition to extended drying times, there is an increased likelihood of condensation forming on the surface of the adhesive. If condensation forms, the surfaces cannot be mated and work must stop until conditions improve. Wait until conditions improve and allow the adhesive to dry completely. Make sure the surface is completely dry before reapplying another coat of adhesive or primer.

Low-VOC Adhesives - Opened containers of Low-VOC adhesives must be used within 48 hours. Stir adhesive occasionally while using. Adhesive will begin to thicken after this point, making it difficult to control applied thickness. In hot weather, do not leave sealed containers on roof for prolonged periods of time. In cold weather, keep material at room temperature until ready to use.

Coverage rates are average and will vary based on job site conditions. Pourous substrates may require additional adhesive. The performance of the roofing system will be diminished if proper amounts of adhesive are not applied.

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Technical Bulletin
No. 1301

Mule-Hide edge metal requirements for warranted projects

February 11, 2013

Sheet metal not covered by warranty
Sheet metal by others – Sheet metal that is provided by others is not covered under our Mule-Hide warranties, and cannot be used on projects that require extended wind speed coverage.

Sheet metal covered by warranty[3]
Mule-Hide coated metal (TPO & PVC) – Mule-Hide coated metal that is properly formed (by others) and installed according to our published details, may be covered under our system warranties, but cannot be used for projects that require extended wind speed coverage.

Sheet metal covered by warranty and eligible for extended wind speed coverage[3]
Mule-Hide pre-manufactured Edge Metal – Mule-Hide pre-manufactured Edge Metal that is properly installed according to our details, is covered under our Mule-Hide System Warranties and is to be used for projects that require extended wind speed coverage.

Description	Warranted	Extended Wind Speed
Sheet Metal by Others	No	No
Mule-Hide Coated Metal	Yes[1,3]	No
Mule-Hide pre-manufactured Edge Metal	Yes[3]	Yes[2,3]

Notes:
1. Mule-Hide Coated Metal must be properly formed (by others) and installed according to our published details.
2. Contact the Mule-Hide Technical Department for information regarding the availability of extended wind speed coverage, appropriate products and specific system requirements.
3. Rain carrying sheet metal such as collector heads, gutters, downspouts and accessories are explicitly excluded from any warranty coverage.

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Technical Bulletin
No. 1302

Use of InsuFoam Roof Insulation In Mule-Hide Roofing Systems

September 2013

InsulFoam roof insulations may be used in Mule-Hide roofing systems and will qualify for a Premium warranty if purchased from Mule-Hide. The InsulFoam products include Expanded and Extruded Polystyrene insulations and care must be taken when using these materials over coal tar pitch. The following is a brief summary of how these insulations may be utilized in a Mule-Hide system.

Warranties – InsulFoam insulations may be used for either Standard or Premium, 10, 15, or 20 year warranties when following Mule-Hide guidelines and InsulFoam recommendations. Must provide proof of purchase (copy of the distributor's invoice showing Mule-Hide SKU numbers) when applying for a Premium Warranty.

Fully Adhered – All fully adhered systems require the use of an approved cover board.

Mechanically Attached

TPO

1. Minimum 1.25 density InsulFoam
2. R-Tech insulation or fanfold with polymeric facer side up

PVC

1. Minimum 1.25 density InsulFoam with slip sheet or cover board
2. R-Tech insulation or fanfold with polymeric facer side up

EPDM

1. Cover board required over InsulFoam
2. R-Tech insulation or fanfold with polymeric facer side up

Ballasted

TPO & EPDM

1. Minimum 1.00 density InsulFoam*
2. R-Tech insulation or fanfold with polymeric facer side up*
   *cover board recommended for high traffic areas

PVC Ballasting not permitted with PVC membranes

Notes:

1. Local building codes must be consulted for the acceptance of installing polystyrene insulations directly over metal decking.
2. Polystyrene insulation cannot be installed directly over coal-tar pitch surfaces or existing PVC membranes. For coal-tar pitch, a min 1-½" thick layer of insulation with a min R value of 5 is required as separation.
3. PVC membranes require separator sheets between the PVC membranes and polystyrene products unless using R-Tech board with polymeric facer side up.

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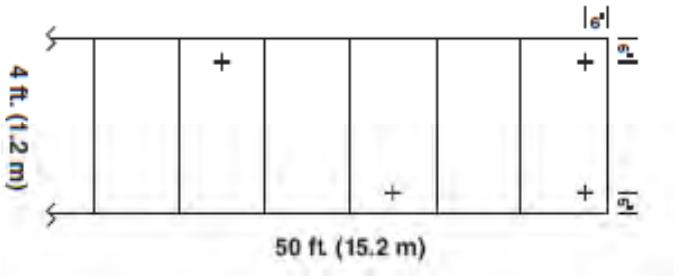
Insulation Attachment

Fully Adhered Systems **–** Attachment will vary depending upon type and thickness of cover board, type of roof deck and wind uplift requirements. Contact the Mule-Hide Technical Department for acceptable attachment patterns.

Mechanically Attached Systems

4' x 4' boards – Secure with four fasteners per board
4' x 8' boards – Secure with eight fasteners per board

FanFold – Attach with two fasteners at each end panel and then install one fastener at every other panel (see drawing)



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Technical Bulletin
No. 1303

Use of Structodek High Density Fiberboard Insulation Cover Board with Primed Red Coating In Mule-Hide Roofing Systems

October 2013

The use of Structodek HD with Primed Red Coating high density wood fiberboard, as manufactured by Blue Ridge Fiberboard, Inc., is approved for use in Mule-Hide warranted roofing systems using either EPDM, TPO & PVC single ply roofing membranes or our self-adhering modified bitumen membranes.

This product is coated two-sides with a red primer that is compatible with all of our single ply adhesives (solvent and water based) as well as our self-adhering modified bitumen membranes.

Structodek HD is to be installed in a conventional manner using either fasteners or insulation adhesives. Attachment rates will vary depending upon project requirements.

Attached is a copy of the data sheet for the Structodek HD board for reference.

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CELOTEX
BLUE RIDGE™
FIBERBOARD

STRUCTODEK® HIGH DENSITY

FIBERBOARD ROOF INSULATION
COVER BOARD WITH PRIMED RED COATING

DESCRIPTION

The proprietary, patent pending, non-asphaltic Primed Red Coating integrated on the surface of STRUCTODEK HD possesses unique bonding characteristics that ultimately result in superior adhesion capabilities with the current membrane & adhesive technology on the market today. The non-asphaltic Primed Red Coating is compatible with all single-ply membranes including PVC, TPO, EPDM, and CSPE without concern of premature membrane degradation that is often associated with asphalt emulsion coated fiberboard products. Additionally the Primed Red Coating, unlike asphalt emulsion coated products, has proven to be compatible with traditional, low VOC and water-based adhesives as well as many foam adhesives. The Primed Red Coating allows adhesives & foams to "key" into the STRUCTODEK HD surface while at the same time deterring excessive adhesive absorption. The unique Primed Red Coating allows for a solid membrane bond while still providing optimal square foot per gallon of adhesive coverage thus insuring a quality & cost effective membrane installation.

While STRUCTODEK HD with Primed Red Coating was designed with the single-ply application in mind it contains many of the same great attributes as STRUCTODEK HD with the traditional non-asphaltic black coating. Accordingly it also works well with asphaltic based systems (BUR), coal tar, and cold-process adhesive products. Additionally, STRUCTODEK HD with Primed Red Coating has also been successful in peel-and-stick applications without the typical need for an additional primer in many instances. The rigid and strong, yet lightweight nature of STRUCTODEK HD with Primed Red Coating is better than heavier alternatives and will keep the roof load below the specified maximum weight. Structodek HD with Primed Red Coating is offered coated on 2 sides and available in 4'x4' and 4'x8' panels.

USES

STRUCTODEK HD with Primed Red Coating can be used as an insulation board, cover board, or re-roof/recover board. The product is a high-density roofing board designed for low-slope single-ply, as well as traditional roof system applications.

SPECIFICATIONS

- ASTM C 208, Type II, Grade 1 and Grade 2
- CAN/ULC-S706-09 Type II, Classes 1 and 2
- UL Classified to Canadian Std CAN/ULC-S107 and US Std UL 790
- FM Approved Class 1 – FM Approval Standard 4450/4470
- Canadian Evaluation CCMC #13186-L
- NOA 10-0120.04; Miami-Dade County, FL; Expiration date 09/18/13

MASTERFORMAT NUMBER AND TITLE

07 22 16 - Roof Board Insulation

FEATURES/BENEFITS

- Compatible with PVC, TPO, EPDM, CSPE single-ply membranes as well as more traditional systems.
- Compatible with most low VOC, water-based and traditional adhesives.
- Superior adhesion without excess adhesive absorption.
- Compatible with most direct peel-and-stick applications.
- BUR compatible - easily handles hot asphalt.
- Approved in thousands of FM RoofNav® & UL Class A rated roof system assemblies.
- Green, non-asphaltic coating – contributes to LEED credits.
- Hail resistant, structurally rigid, easily handles heavy foot traffic and wheeled loads.
- Possesses SOUNDSTOP® sound deadening technology.
- Contributes to thermal insulation with R-values of 1.3 per ½".
- Lightweight, fiberglass free, cuts with a standard utility knife.
- Compressive strength exceeds the Canadian standard at 10% deformation for ½" thickness.
- Coated 2 sides Primed Red provides optimal surface bonding characteristics ideal for use in single and multiple layer roof systems.
- Waxes & other moisture resistant components are added early in the manufacturing process providing superior core and edge protection. The integral moisture resistant components protect the edges in stock panel size (4'x4' or 4'x8') and, more importantly, also protects the edges when the product is cut on the jobsite.
- Cost effective solution- a value engineered champion.

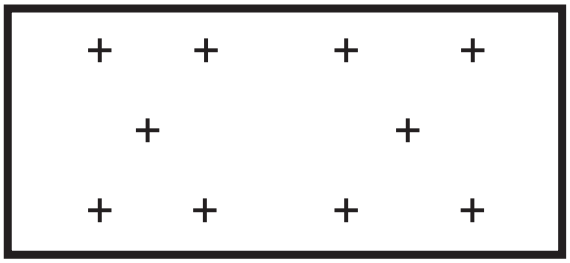
PRECAUTIONS

Do not expose to open flame or excessive heat. May smoulder if ignited. If ignited, extinguish completely. Do not apply flame directly to material when installing a modified bitumen system. Material must be kept dry at all times; in storage and during application. Apply only as much STRUCTODEK HD with Primed Red Coating in one day as can be covered by completed roofing system that day. Do not use as an underlayment for shingles. In re-roofing applications, all wet areas in old roof should be cut out and replaced. Before material is installed, remove all loose and protruding gravel. STRUCTODEK HD with Primed Red Coating must not be used in close proximity to chimneys, heater units, fireplaces, steam pipes, or other surfaces which could provide long-term exposure to excessive heat (maximum 212◦ F) without adequate thermal protection. Consult appropriate heating appliance manufacturer's instructions before installation.

LEED INFORMATION

May help contribute to LEED credits:

- MR Credit 2: Construction Waste Management
- MR Credit 4: Recycled Content
- MR Credit 5: Regional Materials
- MR Credit 6: Rapidly Renewable Materials
- IEQ Credit 4.4: Low-Emitting Materials – Composite Wood and Agrifiber Products



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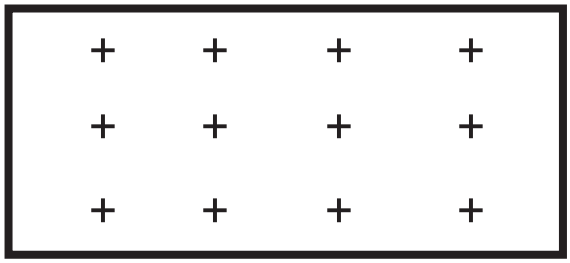

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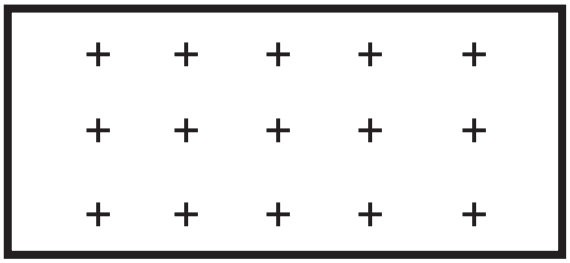

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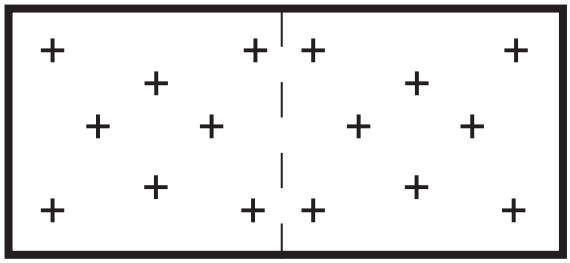

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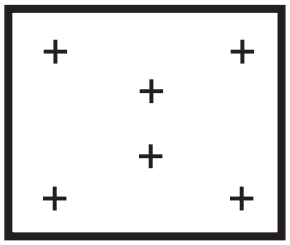

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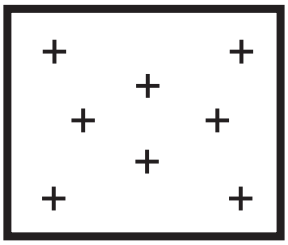

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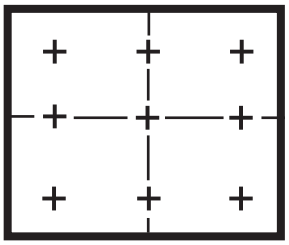

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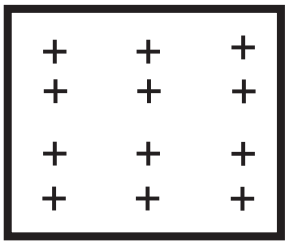

12 FASTS/BD.

Typical FM fastening patterns for 1-60 & 1-90. Actual fastening patterns will vary based upon specific membrane manufacturer's FM system assembly, please refer to membrane manufactures specific fastening requirements as listed in FM's RoofNav system.

Limited Warranty: BLUE RIDGE FIBERBOARD, INC. warrants at the time and place we make shipment, our material will be of good quality and will confirm with our published specifications in force on the date of acceptance of the order. Read complete warranty. Copy furnished upon request.

Disclaimer: The information contained herein is included for illustrative purpose only, and to the best of our knowledge, is accurate and reliable. BLUE RIDE FIBERBOARD, INC. cannot however under any circumstance make any guarantee of results or assume any obligation or liability in connection with the use of this information. As BLUE RIDGE FIBERBOARD, INC. has no control over the use to which others may put its product, it is recommended that the products be tested to determine if suitable for specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine the suitability of products for specific application and assume all responsibilities in connection therewith.

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Technical Bulletin
No. 1304

Revised LTTR Values
For
Polyisocyanurate Roof insulation
(Long Term Thermal Resistance)

October 2013

On January 1, 2014 a new test method for predicting Long Term Thermal R (LTTR) values for Polyisocyanurate roofing products will go into effect. The net effect is that the published LTTR values for polyiso roof insulation will be decreased. All other physical properties will remain the same. The new test method is an attempt to predict the R value of polyiso after 15 years of use.

Q: What is the effective date of the changes?
A: The new test method goes into effect January 1, 2014.

Q: Will any other physical properties change?
A: No. This is merely a different method of determining the LTTR of the product.

Q: Will all Polyiso products and manufacturers be affected?
A: This change will affect all polyiso material and all manufacturers who are members of PIMA.

Q: Does this mean that all Polyiso LTTR values will decrease?
A: Yes, based on the new test method, LTTR values will go down.

Q: How do I price a project that will ship in 2014?
A: If the quote is based on R value then the new LTTR values should be used. Note that the NRCA recommends that designers specify Polyiso by thickness. If the quote is based on thickness then no change is needed.

Q: What if I have already quoted a project for 2014?
A: You should ask to be re-quoted if the quote was based on R value.

Q: How will this affect tapered polyiso insulation?
A: These R values will also decrease beginning in 2014.

Q: What if I have a project that shipped in 2013 and now needs additional material?
A: You should clarify with the designer whether or not they wish to have the new material quoted based on the 2014 LTTR values. Keep in mind that the thickness will change.

Q: What do I do with existing inventory?
A: Inventory purchased prior to January 1, 2014 can be sold with the 2013 R-Values displayed. For instance, if you have bundles of 1.5” ISO with a 2013 label, they can be sold as meeting the 2014 LTTR of 8.5 for 1.5” ISO.

Q: How do the new R Values compare to the present ones?
A: Please see R value comparison on next page.

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Nominal Thickness*** (Inches)	(mm)	**Poly ISO 1** 2013 LTTR*	2014 LTTR**	Metal Deck Max. Flute Spanability (Inches)
1.0	25	6.0	5.6	2 ⅝
1.5	38	9.0	8.5	4 ⅜
1.6	41	9.6	9.1	4 ⅜
1.7	43	10.3	9.6	4 ⅜
2.0	51	12.1	11.4	4 ⅜
2.5	64	15.3	14.4	4 ⅜
2.7	69	16.6	15.6	4 ⅜
3.0	76	18.5	17.4	4 ⅜
3.3	84	20.4	19.2	4 ⅜
3.5	89	21.7	20.5	4 ⅜
3.6	91	22.4	21.1	4 ⅜
4.0	102	25.0	23.6	4 ⅜

*Long Term Thermal Resistance Values are based on ASTM C1289 and CAN/ULC S770 which provides for a 15-year time weighted average.
**LTTR (Long Term Thermal Resistance) determined in accordance with *updated* 2014 ASTM C1289 Standard.
***Other thicknesses available upon special request.

Nominal Thickness*** (Inches)	(mm)	**Poly ISO 2™** 2013 LTTR*	2014 LTTR**	Metal Deck Max. Flute Spanability (Inches)
1.0	25.4	6.0	5.6	2 ⅝
1.5	38.1	9.0	8.5	4 ⅜
2.0	50.8	12.1	11.4	4 ⅜
2.5	63.5	15.3	14.4	4 ⅜
3.0	76.2	18.5	17.4	4 ⅜
3.1	78.8	19.1	18.0	4 ⅜
3.3	83.8	20.4	19.2	4 ⅜
4.0	101.6	25.0	23.6	4 ⅜

*LTTR (Long Term Thermal Resistance) values were determined in accordance with CAN/ULC-S770 and ASTM C1289, Annex A1. All test samples were third-party selected and tested by an accredited material testing laboratory. The LTTR results were reviewed and authorized by FM Approvals and certified by the PIMA Quality Mark Program.
**LTTR (Long Term Thermal Resistance) determined in accordance with *updated* 2014 ASTM C1289 Standard.
***Other thicknesses available upon special request.

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