



# FOAMULAR® Commercial Roofing

## Low Slope Single-Ply Insulated Roof Systems

### Single-Ply Roofing Systems

Single-ply roofing membranes are flexible sheets of compounded synthetic materials that are manufactured in a factory. Single ply roof systems provide strength, flexibility, durability and installation speed. The inherent advantages of single-ply systems is the consistency of the quality of the plant manufactured membrane, and the versatility of product types, installation and attachment methods, all resulting in broader system appeal. Single-ply systems are different than another common category of roofing known as BUR (built up roofs), which utilize alternating layers of hot asphalt and reinforcing fabrics to construct a roof in place.

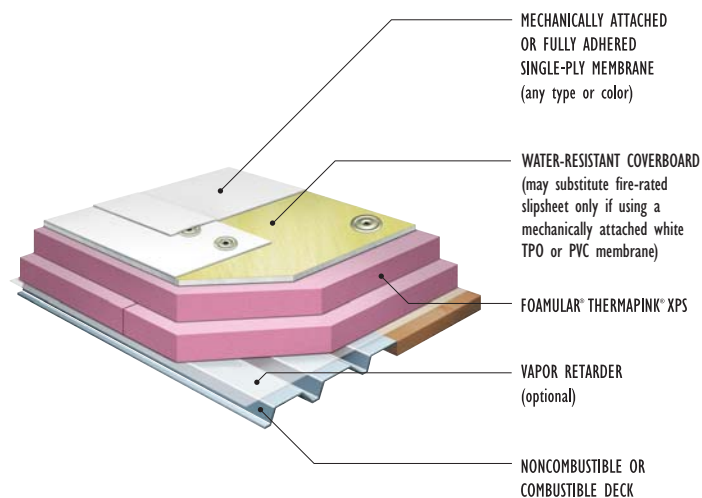
### FOAMULAR® THERMAPINK® Extruded Polystyrene (XPS) Rigid Insulation

FOAMULAR® THERMAPINK® XPS is a perfect insulation choice for single-ply roofing systems. THERMAPINK® XPS insulation, with a variety of compressive strengths, high resistance to water absorption, and a stable long term R value of 5 per inch, is a perfect insulation layer for use below single-ply membrane roofing systems. Membrane systems vary in color and chemical composition, and, they may be mechanically attached, loose laid/ballasted or fully adhered. Depending on the type of system specified, cover boards, or slip sheets may be required over FOAMULAR® THERMAPINK® XPS insulation. Single-ply systems with THERMAPINK® XPS insulation have a wide variety of Underwriters Laboratories (UL) and Factory Mutual (FM) performance ratings for fire and wind resistance including ASTM E108 Class A, FM 4450 Class I, UL 1256 direct to steel deck with no thermal barrier layer, and, 90 psf and higher wind classifications.

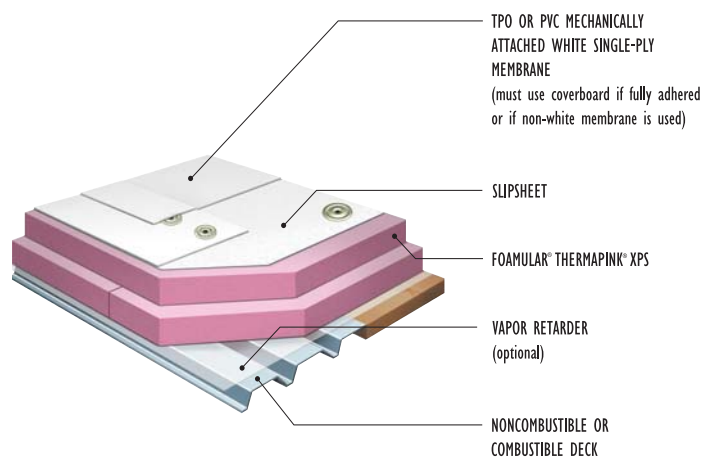
### Notes

1. See actual warranty for complete details, limitations and requirements.

### Low Slope Single-Ply Above Deck Roof Insulation



System with Cover Board



System with Fire Resistant Slipsheet



# FOAMULAR® Commercial Roofing

## Recover Roofing Insulated Roof Systems

### Recover Single-Ply Roofing Systems

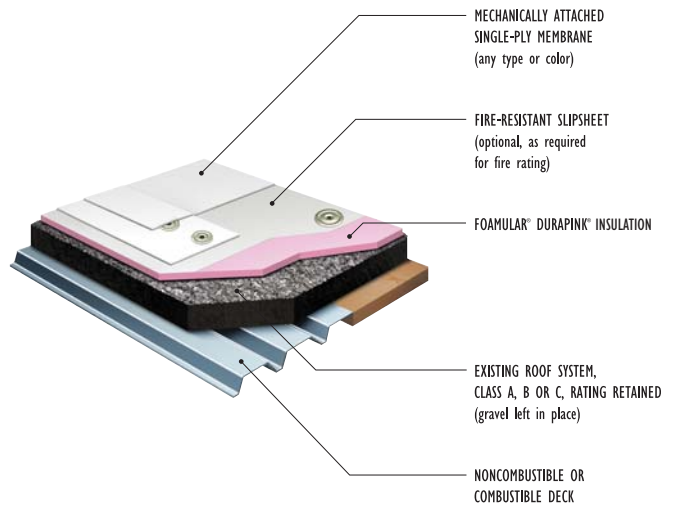
When an existing BUR reaches the end of its service life and it must be replaced, a decision must be made to either: 1) completely remove the existing BUR/insulation and replace it with another system or 2) “recover” the existing BUR with a new FOAMULAR® DURAPINK® extruded polystyrene (XPS) insulation layer and single-ply membrane roofing system.

The first option, total tear off, requires the cost of time and labor to remove the old system, haul and dispose of the waste in a landfill, and completely replace the system with new insulation/membrane from the deck up. The second option, “recover,” salvages the existing system and its insulation layers by placing a new layer of insulation and membrane on top of the existing BUR, avoiding the time, labor and landfill costs required to dispose of a torn off system.

Recover systems save time and money by avoiding tear off and landfill costs, while salvaging the useful R-value of existing insulation layers by keeping them on the roof. However, not every roof is a candidate for recover. Before choosing recover, it must be verified that the existing roof deck is structurally sound, and that the existing insulation layers are dry, or capable of drying after recover roofing is complete.

Recover roofing systems are typically factory produced single-ply roofing membranes that provide strength, flexibility, durability and installation speed. They are usually mechanically attached to avoid additional weight on the existing structure from ballast or cover boards in fully adhered systems.

### Recover Roof Insulation



### FOAMULAR® DURAPINK® XPS Rigid Insulation

FOAMULAR® DURAPINK® XPS is a perfect insulation choice for recover single-ply roofing systems. Unlike wood fiberboard often used for recover, DURAPINK® XPS insulation has high resistance to water absorption, maintaining all of its insulation and strength properties while any latent water that may be in the old system dissipates. DURAPINK® recover insulation systems have a wide variety of Underwriters Laboratories (UL) and Factory Mutual (FM) performance ratings for fire and wind resistance including ASTM E108 Class A, and wind uplift resistance classifications.

### Notes

1. See actual warranty for complete details, limitations and requirements.



# FOAMULAR® Commercial Roofing

## PRMA, Vegetative and Plaza Deck Insulated Roof Systems

### PRMA, Vegetative and Plaza Deck Waterproofing

Protected roof membrane assemblies (PRMA) provide high value and long term durability on long life cycle buildings. PRMA roofs range in function from infrequently accessed stone ballasted systems, to paver/plaza deck walking surfaces, to fully landscaped vegetative roof gardens. PRMA extends the life of roofing components and reduces building maintenance costs by eliminating UV exposure and minimizing thermal cycling.

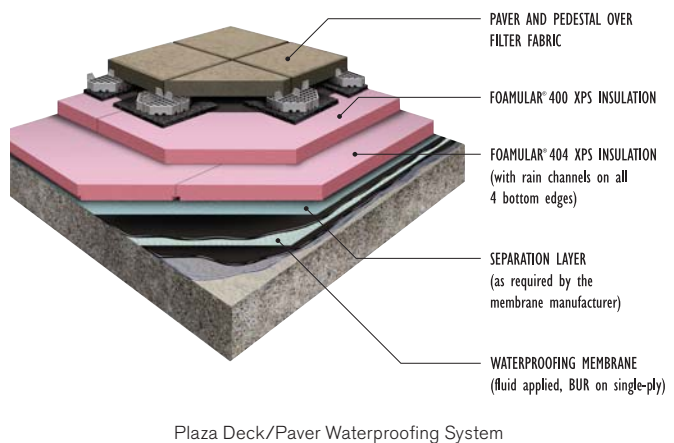
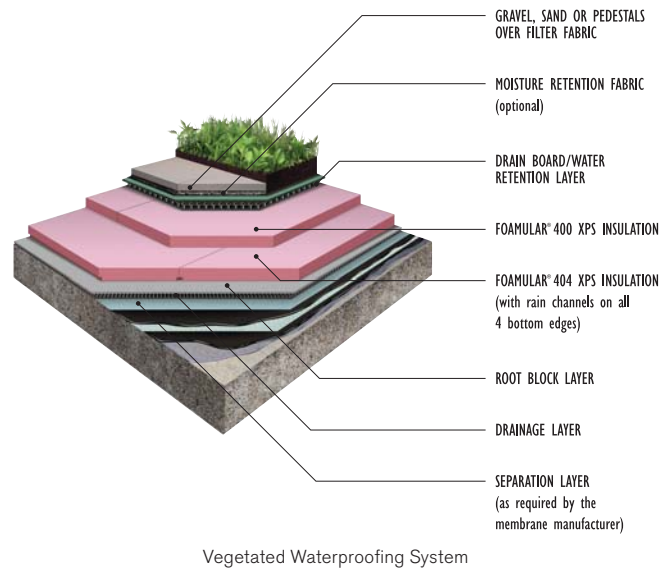
Vegetative roofs are gaining widespread acceptance due to the practical, financial, and environmental benefits they provide. In addition to creating more usable landscaped space in the form of rooftop terraces, walkways, plazas and gardens, a well insulated PRMA vegetative roof assembly improves energy efficiency and reduces heating and cooling costs. In some instances vegetative roofs receive financial funding incentives from government agencies responsible for reducing environmental impact. Vegetative roofs provide a number of important environmental benefits such as reduced storm water runoff and sewer fees, they help keep contaminants out of lakes and streams, they reduce the urban heat island effect, and they improve air quality by converting carbon dioxide to oxygen.

### FOAMULAR® Extruded Polystyrene (XPS) Insulation for PRMA

FOAMULAR® XPS insulation products 404, 604, 404RB and 604RB are used in PRMA applications. Extruded polystyrene is the only insulation used in PRMA roof systems due to its excellent resistance to water absorption compared to any other type of rigid board insulation. Because the insulation is installed above the waterproofing membrane and is exposed to water through its service life, resistance to water while maintaining physical properties is critical.

FOAMULAR® 404 and 604 have channels cut into the bottom edges on all four sides of the board to enhance drainage at the board/membrane interface. FOAMULAR® 404RB and 604RB have ribs cut into the top surface of the board in addition to the channels on the bottom. The ribs serve as drainage enhancement under pavers when the pavers are laid directly on top of the foam board.

### PRMA, Vegetative and Plaza Deck Above Deck Roof Insulation



### Notes

1. See actual warranty for complete details, limitations and requirements.



# FOAMULAR® Commercial Roofing

## Architectural Metal Insulated Roof Systems

### Architectural Metal Roofing Systems

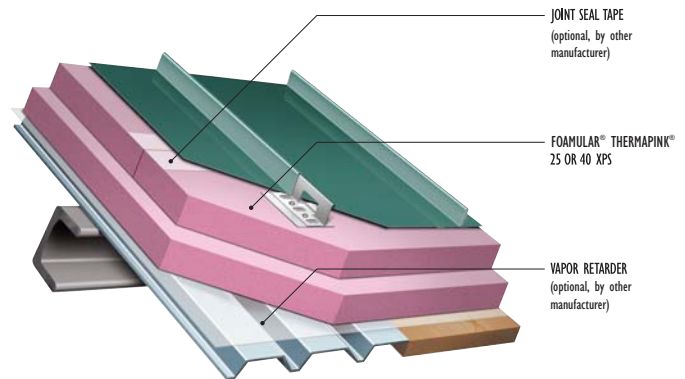
The exceptional performance of architectural metal roofing makes it one of the most specified products in commercial roofing. Architectural metal roofing systems are energy efficient with various levels of solar reflectance and emittance depending on the heating or cooling needs of a given climate. Metal roofs are recyclable, lightweight and easy to install. They provide protection against extreme weather conditions. With strong corrosion resistance they offer long lasting durability, all of which equals sustainability. Metal roofs are aesthetically pleasing, versatile and cost efficient throughout their life cycle. They come in many colors and seam profiles including standing seam, curved, exposed fastener, concealed fastener, suitable for many applications including new and retrofit projects, and any type of commercial or residential projects

### FOAMULAR® THERMAPINK® Extruded Polystyrene (XPS) Rigid Insulation

FOAMULAR® THERMAPINK® XPS insulation is strong, lightweight and easily cut making it a perfect insulation choice for architectural metal roofing systems. THERMAPINK® 25 insulation has a 25 psi compressive strength that is strong enough to hold the retention clips used to secure the metal roofing system. Bearing plates under the clips seat into the surface of the insulation as they are tightened, and no adhered facer means no extra labor needed to trim the surface to achieve proper seating.

THERMAPINK® XPS insulation has high resistance to water absorption, and a stable long-term R value of 5 per inch. Since FOAMULAR® THERMAPINK® XPS insulation is highly water resistant it is easier to stage on job sites than products like polyisocyanurate and EPS that are more moisture sensitive and subject to restrictive storage and warranty rules. Also, with moderate perm ratings, and high, long-lasting R-value, THERMAPINK® insulation layers with sealed joints help limit the formation of condensation under metal roofing and help drain it away when it does form. Sealed joints and high water resistance also makes THERMAPINK® XPS insulation a temporary water shed while the job is awaiting final installation of the metal roof covering.

Architectural Metal Roofing System



### XPS Direct-to-Deck Installation

FOAMULAR® THERMAPINK® XPS insulation in architectural metal roofing systems is approved for direct to deck installation, meaning no gypsum board thermal barrier layer is required between the structural steel roof deck and the insulation. See UL Roof Deck Construction No. 457, tested in accordance with ANSI/UL Standard 1256. (Not applicable when hourly ratings, ASTM E119, are needed for the roof assembly) Also, in architectural metal roofing THERMAPINK® XPS insulation is Class A fire rated, tested in accordance with ASTM E108.

### Notes

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# FOAMULAR® Commercial Roofing

## FOAMULAR® THERMAPINK® Extruded Polystyrene (XPS) Rigid Foam Insulation

### Guide for Use in Low Slope Roofing<sup>1</sup> Systems

SYSTEM TYPE →	Single-Ply New Construction or Re-Roofing by Total Tear-Off				Metal Roofing	Recover Roofing Single-Ply, leave existing roof system in place	PRMA (Protected Roof Membrane Assembly)	
	Mechanically Attached, Non-White (Typically black EPDM, or colored TPO, or PVC)	Mechanically Attached, White (Typically PVC or TPO)	Fully Adhered, White or Non-White (Any membrane type)	Ballasted, White or Non-White (Any membrane type)			Single-Ply, Ballasted	Waterproofing, Liquid Applied, Fully Adhered
Membrane Description <sup>2</sup> →					Standing Seam, with Mechanical Attachment Brackets	Mechanically Attached White or Non-White (Any membrane type)		
SYSTEM COMPONENTS	↓	↓	↓	↓	↓	↓	↓	↓
Structural Deck <sup>3</sup>	Steel	Steel	Steel	Steel	Steel	Steel	Concrete	Concrete
Thermal Barrier <sup>4</sup>	Not Required	Not Required	Not Required	Not Required	Not Required	Existing (assume existing roof is code compliant)	Not Required	Not Required
Insulation <sup>5</sup> (below membrane)	THERMAPINK® 18 or 25	THERMAPINK® 18 or 25	THERMAPINK® 18 or 25	THERMAPINK® 18 or 25	THERMAPINK® 18 or 25	Existing Insulation if Any	THERMAPINK® 18 or 25 (under membrane insulation is optional)	Not applicable at this layer
Cover Layer <sup>6</sup>	Board	Fabric Slipsheet	Board	Fabric slipsheet if PVC membrane used, otherwise, not required.	Per metal roofing manufacturers instructions	Existing Cover if Any	None unless membrane is PVC, then use approved slipsheet.	Not applicable
Membrane <sup>7</sup>	Approved Single-Ply	Approved Single-Ply	Approved Single-Ply	Approved Single-Ply	Metal	Existing Membrane	Approved Single Ply	Liquid applied, BUR, mod bit or single-ply on concrete deck
Ballast <sup>8</sup>	Not Applicable	Not Applicable	Not Applicable	Ballast (stone or pavers)	Not Applicable	Existing Gravel Surface Power Broomed Clean	Not applicable at this layer	Bond Breaking Slip Sheet
Other Details Applicable only to Recover Roofing or PRMA →						DURAPINK®, or DURAPINK® Plus if used with PVC membrane	FOAMULAR® 404, 404RB, 604, 604RB	FOAMULAR® 404, 404RB, 604, 604RB
						New Approved Single Ply Membrane (Any color)	Ballast (stone or pavers) <sup>8</sup>	Ballast (stone or pavers) <sup>8</sup>

Notes and Details:

1. Must consult complete specifications for full product and system details. See [www.foamular.com](http://www.foamular.com), the UL On-line Certifications Directory and FM RoofNav for complete system details.
2. Mechanically attached membranes are typically held in place with screws and stress plates. Fully adhered are held with adhesives or are self-bonding. Ballasted are loose laid, held down with dead weight of stones or pavers.
3. Typical structural deck type is noted. Concrete can be used in place of steel or vice-versa.
4. Concrete decks are a thermal (fire) barrier, therefore no need to add gypsum board. For steel deck, gyp board is not required for UL Const. #457. Gypsum board thermal barrier is required for all FM Class 1 steel deck systems using XPS. Gypsum board thermal barrier is also required for PRMA systems on steel deck.
5. Typical insulation choice is shown. Other THERMAPINK® products may be used if specified. Thickness may be limited by FM or UL.
6. Cover layer may be board such as gypsum (GP DensDeck is common), or high density wood fiber. It may be mechanically attached or fully adhered per system specifications. Fabric slipsheets are needed for PVC membranes for chemical separation and fire rating (Sheet must be approved by PVC manufacturer. Atlas FR-10 slipsheet can be used). Fabric slipsheet needed for TPO for fire rating (Atlas FR-10 is common). For metal roofing, a cover board is required with a copper or black roof surface.
7. Approved Single Ply means approved by membrane manufacturer, and UL or FM, and installed in accordance with manufacturers and UL or FM system specifications. For recover roofing systems, the existing membrane may be BUR, modified bitumen or single ply.
8. Ballast weight, type and placement per design standard, ANSI/SPRI RP-4, Wind Design Guide for Ballasted Single-Ply Roof Systems.



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