



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

Product Data Sheet



Energy-Saving¹, Moisture-Resistant XPS Insulation

Direct-to-Deck Roofing Insulation

THERMAPINK® 18 Insulation:
ASTM C578 Type X, 18 psi minimum

THERMAPINK® 25 Insulation:
ASTM C578 Type IV, 25 psi minimum

Description

Owens Corning™ FOAMULAR® THERMAPINK® Extruded Polystyrene (XPS) Insulation is a closed cell, moisture-resistant rigid foam board specially designed for roofing applications.

Like all FOAMULAR® XPS Insulation products, FOAMULAR® THERMAPINK® Extruded Polystyrene (XPS) Rigid Foam Insulation is made with Owens Corning's patented Hydrovac® process technology under strict quality control measures, which helps to make it highly resistant to moisture and permits the product to retain its high R-value year after year even after exposure to moisture.

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

efficiencies during installation such as “direct-to-steel deck” with no gypsum board thermal barrier needed in most commercial single-ply and metal roofing systems. FOAMULAR® THERMAPINK® Extruded Polystyrene (XPS) Rigid Foam Insulation can be placed over a concrete deck or directly on a non-fire-resistance-rated (non ASTM E119 hourly rated) steel roof deck without the need for a thermal barrier board. For additional details, see Underwriters Laboratories (UL) Inc. Roof Deck Construction #457, tested in accordance with ANSI/UL Standard 1256. This application requires that the insulation be capable of spanning across rib openings in the deck and provide reasonable resistance to foot traffic and other normal roof loads. See the Flute Span Capability chart for recommended minimum FOAMULAR® THERMAPINK® Extruded Polystyrene (XPS) Rigid Foam Insulation thicknesses applied direct to deck.

Key Features

- Exceptional moisture resistance and outstanding insulation for direct-to-deck application in steel deck roofing systems
- Excellent long-term stable insulating performance with an R-value² of R-5 per inch
- Exceptional moisture resistance, long-term durability
- Limited lifetime warranty³— maintains 90% of R-value

and covers all ASTM C578 properties

- GREENGUARD Gold Certified
- The only XPS foam with certified recycled content— certified by SCS Global Services to contain a minimum 20% recycled content
- Will not corrode, rot or support mold growth
- Zero ozone depletion potential with 70% less global warming potential than our previous formula
- Reusable
- Lightweight, durable rigid foam panels are easy to handle and install
- Easy to saw, cut or score

Technical Information

FOAMULAR® THERMAPINK® Extruded Polystyrene (XPS) Rigid Foam Insulation is a thermoplastic material with a maximum service temperature of 165°F. In horizontal applications, FOAMULAR® XPS Insulation may experience greater solar exposure than in vertical applications and it may be damaged by heat buildup. Simple precautions during construction can minimize the potential for heat related damage. Install only as much FOAMULAR® XPS Insulation as can be covered in the same day. For horizontal applications always turn the print side down so the black print does not show to the sun which may, at times, act as a solar collector and raise the temperature of the foam surface under the print. Additional protection over FOAMULAR® XPS Insulation

¹ Savings vary. Find out why in the seller's fact sheet on R-values. Higher R-values mean greater insulating power.

² R means the resistance to heat flow; the higher the R-value, the greater the insulating power.

³ See actual warranty for complete details, limitations and requirements.



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

Product Data Sheet

such as added cover boards, reflective membrane surfaces, or pavers may be required in areas adjacent to reflective walls, parapets, rooftop equipment areas or other vertical surfaces that may reflect and intensify the sun's energy. Do not cover FOAMULAR® XPS Insulation either stored (factory wrapped or unwrapped), or partially installed, with dark colored (non-white), or clear (non-opaque) coverings and leave it exposed to the sun. Examples of such coverings include but are not limited to filter fabrics, membranes, temporary tarps, clear polyethylene, etc. If improperly covered, and exposed to the right combination of sun, time and temperature, deformation damage may occur rapidly. When covering is necessary, use only white opaque material, or, cover with the final approved finish material as soon as possible. A white opaque cover reflects energy from the sun rather than absorbing it or passing it which reduces the potential for excessive heat exposure. Clear (non-opaque) coverings allow light energy from the sun to pass through rather than reflect it which may produce a partial greenhouse effect, trapping hot air and raising the temperature below the cover. See Owens Corning publication number 10015704, "Heat Build Up Due to Solar Exposure" for more information.

FOAMULAR® XPS Insulation can be stored outdoors during normal construction cycles. During that time some fading of color may begin due to UV

Typical Physical Properties¹

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

Property	Test Method ²	THERMAPINK® Insulation	
		18	25
Thermal Resistance³ , R-Value (180 day) minimum, hr•ft ² •°F/Btu (RSI, °C•m ² /W) @ 75°F (24°C) mean temperature	ASTM C518		
1" Thickness		5.0 (0.88)	
1½" Thickness		7.5 (1.32)	
2" Thickness		10 (1.76)	
3" Thickness		15 (2.64)	
4" Thickness		20 (3.52)	
@ 40°F (4.4°C) mean temperature			
1" Thickness		5.4 (0.95)	
1½" Thickness		8.1 (1.43)	
2" Thickness		10.8 (1.90)	
3" Thickness		16.2 (2.85)	
4" Thickness		21.6 (3.80)	
Long Term Thermal Resistance , LTTR-Value ³ minimum °F•ft ² •hr/Btu (RSI, °C•m ² /W) @ 75°F (24°C) mean temperature	CAN/ULC S770-03		
1" Thickness		5.0 (0.88)	
1½" Thickness		7.8 (1.37)	
2" Thickness		10.6 (1.87)	
3" Thickness		16.2 (2.85)	
4" Thickness		22.0 (3.87)	
Compressive Strength⁴ , minimum psi (kPa)	ASTM D1621	18 (124)	25 (172)
Flexural Strength⁵ , minimum psi (kPa)	ASTM C203	60 (414)	75 (517)
Water Absorption⁶ , maximum % by volume	ASTM C272	0.10	
Water Vapor Permeance⁷ , maximum perm (ng/Pa•s•m ²)	ASTM E96	1.5 (86)	
Dimensional Stability , maximum % linear change	ASTM D2126	2.0	
Flame Spread^{8,9}	ASTM E84	5	
Smoke Developed^{8,9,10}	ASTM E84	45-175	
Oxygen Index⁸ , minimum % by volume	ASTM D2863	24	
Service Temperature , maximum °F (°C)	—	165 (74)	
Linear Coefficient of Thermal Expansion , in/in/°F (m/m/°C)	ASTM E228	3.5 × 10 ⁻⁵ (6.3 × 10 ⁻⁵)	

- Properties shown are representative values for 1" thick material, unless otherwise specified.
- Modified as required to meet ASTM C578.
- R means the resistance to heat flow; the higher the value, the greater the insulation power. This insulation must be installed properly to get the marked R-value. Follow the manufacturer's instructions carefully. If a manufacturer's fact sheet is not provided with the material shipment, request this and review it carefully. R-values vary depending on many factors including the mean temperature at which the test is conducted, and the age of the sample at the time of testing. Because rigid foam plastic insulation products are not all aged in accordance with the same standards, it is useful to publish comparison R-value data. The R-value for FOAMULAR® XPS Insulation is provided from testing at two mean temperatures, 40°F and 75°F, and from two aging (conditioning) techniques, 180 day real-time aged (as mandated by ASTM C578) and a method of accelerated aging sometimes called "Long Term Thermal Resistance" (LTTR) per CAN/ULC S770-03. The R-value at 180 day real-time age and 75°F mean temperature is commonly used to compare products and is the value printed on the product.
- Values at yield or 10% deflection, whichever occurs first.
- Value at yield or 5%, whichever occurs first.
- Data ranges from 0.00 to value shown due to the level of precision of the test method.
- Water vapor permeance decreases as thickness increases.
- These laboratory tests are not intended to describe the hazards presented by this material under actual fire conditions.
- Data from Underwriters Laboratories Inc.® classified. See Classification Certificate U-197.
- ASTM E84 is thickness-dependent, therefore a range of values is given.

exposure, and, if exposed for extended periods of time, some degradation or "dusting" of the polystyrene surface may begin. It is best if the product is installed within 60 days to minimize degradation. Once installed and

covered, the deterioration stops, and damage is limited to the thin top surface layers of cells. Cells below are generally unharmed and still useful insulation.



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

Product Data Sheet

Product and Packaging Data¹

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Material		Packaging						
Extruded polystyrene closed-cell foam panel with continuous skin on face and back surface.		Shipped in poly-wrapped units with individually wrapped or banded bundles.						
Thickness (in)	Product Dimensions Thickness (in) x Width (in) x Length (in)	Pallet (Unit) Dimensions (typical) Width (ft) x Length (ft) x Height (ft)	Square feet per Pallet	Board feet per Pallet	Bundles per Pallet	Pieces per Bundle	Pieces per Pallet	Edges
THERMAPINK® 25 Insulation ²								
1	1 x 48 x 96	4 x 8 x 8	3,072	3,072	8	12	96	Square
1½	1.5 x 48 x 96	4 x 8 x 8	2,048	3,072	8	8	64	
2	2 x 48 x 96	4 x 8 x 8	1,536	3,072	8	6	48	
3	3 x 48 x 96	4 x 8 x 8	1,024	3,072	8	4	32	
4	4 x 48 x 96	4 x 8 x 8	768	3,072	8	3	24	

- Product availability and lead times vary by region and by product. Consult your local Owens Corning sales representative for availability and lead times.
- THERMAPINK® 18 insulation is available in the same sizes but is made to order only.

Flute Span Capability^{1,4,5}

Steel Deck Type ²	Thickness, minimum ³		Rib Opening, Width	Rib Depth
	THERMAPINK® 18	THERMAPINK® 25		
A (narrow rib)	1"	1"	1"	1½"
F (intermediate rib)	1"	1"	1¾"	1½"
B (wide rib)	1½"	1½"	2¾"	1½"
3DR (deep rib)	2"	1½"	2¾"	3" and greater
Long Span	2"	1½"	3¾" 4¾"	3" and greater
Long Span	2"	2"	6"	3" and greater
Cellular	Not Permitted ⁴	Not Permitted ⁴	Varies	Varies
Acoustical	Not Permitted ⁴	Not Permitted ⁴	Varies	Varies

- See Underwriters Laboratories Roof Deck Construction #457 for full assembly details. Fire tested in accordance with ANSI/UL 1256, Fire Test of Roof Deck Constructions.
- Minimum steel deck depth permitted is 1½". Minimum 22 MSG. Cellular and acoustical decks were not tested, and are therefore not permitted.
- THERMAPINK® 400 and 600 insulations were not tested direct to deck and are not included in the UL #457 or building code listings for direct to deck application.
- Data provided is derived from testing in general accordance with FM 4450 and FM 4470 resistance to foot traffic requirements.
- FM Class I under deck fire ratings are not achieved by XPS direct to steel deck assemblies.

Additional protection over the THERMAPINK® Extruded Polystyrene (XPS) Rigid Foam Insulation such as added cover boards, reflective membrane surfaces or pavers may be required in roof areas adjacent to reflective walls, parapets, rooftop equipment areas, or other vertical surfaces that may reflect and intensify the sun's energy.

This product is combustible. For additional information, consult MSDS or contact Owens Corning World Headquarters at I-800-GET-PINK®.

Standards, Codes Compliance

- Meets ASTM C578 Type X (THERMAPINK® 18 Insulation) or Type IV (THERMAPINK® 25 Insulation)
- UL Classified. A copy of UL Classification Certificate U-197 is available at www.owenscorning.com
- See UL ER8811-01 at UL.com



- UL (Underwriters Laboratories) Roof Deck Constructions, tested in accordance with UL 1256, "Standard for Fire Test of Roof Deck Constructions" including Roof Deck Construction #457
- FM (Factory Mutual) Class I Roof Decks
- ASTM E108 Fire Classified Assemblies
- ASTM E119 Fire Resistance Rated Roof/Ceiling Assemblies
- UL and FM Wind Uplift Rated Assemblies
- See www.foamular.com, UL On-Line Certifications Directory, and FM RoofNav for details on listings, constructions and assemblies
- Meets California Quality Standards and HUD UM #71a
- Compliance verification by RADCO (AA-650)



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Product Data Sheet

Certifications and Sustainable Features of FOAMULAR® XPS Insulation

- FOAMULAR® XPS Insulation is reusable
- FOAMULAR® XPS Insulation is made with a zero ozone depletion formula
- Certified by SCS Global Services to contain a minimum of 20% recycled content
- Certified to meet indoor air quality standards under the stringent GREENGUARD Indoor Air Quality Certification Program, and the GREENGUARD Gold Certification
- Utilizing FOAMULAR® XPS Insulation can help achieve green building certifications including the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) certification

Architectural Notes

- Assemblies should be evaluated for effectiveness and location of vapor retarders to avoid condensation and subsequent damage to the structure (see current ASHRAE Handbook of Fundamentals)
- THERMAPINK® Extruded Polystyrene (XPS) Rigid Foam Insulation is recommended for use over concrete or over steel decks. Please consult UL Roof Deck Construction #457, tested in accordance with UL Standard 1256, for specific details about using THERMAPINK® insulation over steel decks without a thermal barrier. Note that barrier boards or cover boards may still be needed when designing hourly fire resistance

or class A, B or C rated roofing systems. Please consult applicable UL listing. Thermal barriers are not required over concrete or wood decks

- THERMAPINK® products are also recommended for use over steel decks when an approved thermal barrier is used between the steel deck and the insulation as in FM Class I roof deck assemblies
- Some roof membranes, such as PVC, require a slip sheet, such as a glass fiber mat or barrier board, over the insulation
- A mechanically attached or fully adhered overlayment of gypsum board, wood fiber or perlite board is required over THERMAPINK® roof insulation for BUR and torch-applied modified bitumen. When adhering or exposing THERMAPINK® Extruded Polystyrene (XPS) Rigid Foam Insulation to hot bitumen, the bitumen must be allowed to cool to 225-250°F
- When a dark colored mechanically attached membrane is used, without ballast, or, when a membrane is fully adhered using solvent based adhesives, FOAMULAR® XPS Insulation must be overlaid with a suitable cover board, such as wood fiber, gypsum or perlite
- For roofing and other horizontal applications, product should be installed with the printed surface facing downward
- **Important**—Apply only as much FOAMULAR® XPS Insulation as can be covered

by the finished roofing surface (overlayment, roof membrane and/or ballast) in the same day of installation to prevent its discoloration, wind displacement and possible damage from heat build-up by excessive sun exposure

- **For ballasted roofing systems (including PRMA⁴) with no cover board over the XPS,** black/dark (non-white) roofing membranes (or filtration fabrics in PRMA) over FOAMULAR® XPS Insulation must be ballasted IMMEDIATELY after placement to prevent potential heat damage from sun exposure and wind displacement of the insulation under the membrane/fabric
- **For mechanically attached and fully adhered roofing systems,** in areas where black/dark membranes are used and where "reflected solar energy" is expected to be present, FOAMULAR® XPS Insulation needs protection in addition to normally specified cover boards. Roof areas adjacent to higher walls or other structures with reflective cladding should be considered for additional heat protection. For example, metal or glass cladding; or near, or in between, large groupings of mechanical equipment; or near higher reflective parapets, should be considered for additional heat protection. Additional heat protection for such roof areas include covering with pavers or ballast, or, in lieu of paver or ballast protection, black/dark (non-white)

4 PRMA—Protected Roof Membrane Assembly.



FOAMULAR® THERMAPINK®

Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet

membranes must be coated with white reflective topping, to avoid damage due to the intensified heat exposure from reflected sun in such areas

Environmental and Sustainability

Owens Corning is a worldwide leader in building material systems, insulation and composite solutions, delivering a broad range of high-quality products and services. Owens Corning is committed to driving sustainability by delivering solutions, transforming markets and enhancing lives. More information can be found at <http://sustainability.owenscorning.com>.

Warranty

FOAMULAR® XPS Insulation limited lifetime warranty maintains 90% of its R-value for the lifetime of the building and covers all ASTM C578 properties. See actual warranty for complete details, limitations and requirements at www.owenscorning.com.

All products described here may not be available in all geographic markets. Consult your local sales office representative for more information.

For more information on the Owens Corning family of building products, contact your Owens Corning dealer, call 1-800-GET-PINK®, or access www.owenscorning.com.



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SCS Global Services provides independent verification of recycled content in building materials and verifies recycled content claims made by manufacturers. For more information, visit www.SCSglobalservices.com.

GREENGUARD Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit ul.com/gg.

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