



FOAMULAR® 404, 604, 404 RB and 604 RB Extruded Polystyrene (XPS) Rigid Foam Insulation



Description

FOAMULAR® 404 and FOAMULAR® 604 Extruded Polystyrene (XPS) Rigid Foam Insulations are specially designed for use in Protected Roof Membrane Assemblies (PRMA), where the insulation is placed directly over the membrane. The compressive strength of FOAMULAR® XPS Insulation provides the integrity needed for long-term roof performance.

Applications

- FOAMULAR® 404 and 604 XPS Rigid Foam Insulation products protect the roof membrane from physical damage, thermal stress and UV exposure in PRMA systems
- Designed for use directly with pavers, FOAMULAR® 404 RB and 604 RB XPS Rigid Foam Insulation products provide the support necessary for pavers while maintaining the drainage necessary to prevent moisture accumulation at the foam-paver interface

Features

- Excellent long-term stable insulating performance with an R-value¹ of R-5 per inch
- Exceptional moisture resistance, long-term durability
- Lightweight, durable rigid foam panels are easy to handle and install
- Easy to saw, cut or score

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

Technical Information

When FOAMULAR® 404, 604, 404 RB and 604 RB Extruded Polystyrene (XPS) Rigid Foam Insulation are used under dark colored, non-white pavers other than concrete, such as rubber, additional solar heat protection should be considered.

For roofing and other horizontal applications, product should be installed with the printed surface facing downward.

This product is combustible. A protective barrier or thermal barrier is required as specified in the appropriate building code. For additional information, contact Owens Corning World Headquarters at 1-800-GET-PINK®.

All construction should be evaluated for the necessity to provide vapor retarders. See current ASHRAE Handbook of Fundamentals.

FOAMULAR® XPS Insulation can be exposed to the exterior up to 60 days. During that time some degradation or "dusting" of the polystyrene surface may begin. Once covered, the deterioration stops.

FOAMULAR® Extruded Polystyrene (XPS) Insulation is a thermoplastic material with a maximum service temperature of 165°F. For horizontal applications always turn the black print side down. 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. See Owens Corning publication number 10015704, "Heat Build Up Due to Solar Exposure" for more information.

Typical Physical Properties¹

Property	Test Method ²	Value			
		404	404 RB	604	604 RB
Thermal Resistance ³ , R-Value (180 day minimum, hr·ft ² ·°F/Btu (RSI, °C·m ² /W) @ 75°F (24°C) mean temperature	ASTM C 518				
2" Thickness		10 (1.76)	9.5 (1.67)	10 (1.76)	9.5 (1.67)
2½" Thickness		12.5 (2.20)	—	—	—
3" Thickness		15 (2.64)	14.5 (2.55)	15 (2.64)	14.5 (2.55)
4" Thickness		20 (3.52)	—	—	—
@ 40°F (4.4°C) mean temperature					
2" Thickness		10.8 (1.90)	—	10.8 (1.90)	—
2½" Thickness		13.5 (2.38)	—	—	—
3" Thickness		16.2 (2.85)	—	16.2 (2.85)	—
4" Thickness		21.6 (3.8)	—	—	—
Long Term Thermal Resistance, LTTR-Value ³ , minimum, hr·ft ² ·°F/Btu (RSI, °C·m ² /W) @ 75°F (24°C) mean temperature	CAN/ULC S770-03				
2" Thickness		10.6 (1.87)	—	10.6 (1.87)	—
2½" Thickness		13.4 (2.36)	—	—	—
3" Thickness		16.2 (2.85)	—	16.2 (2.85)	—
4" Thickness		22 (3.87)	—	—	—
Compressive Strength ⁴ , minimum psi (kPa)	ASTM D1621	40 (276)	—	60 (414)	—
Flexural Strength ⁵ , minimum psi (kPa)	ASTM C203	115 (793)	—	140 (965)	—
Water Absorption ⁶ , maximum % by volume	ASTM C272	—	0.05	—	—
Water Vapor Permeance ⁷ , maximum perm (ng/Pa·s·m ²)	ASTM E96	—	1.1 (63)	—	—
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 Index ⁸ , 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 x 10 ⁻⁵ (6.3 x 10 ⁻⁵)	—	—

- Properties shown are representative values for core 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.

Maximum Design Load Recommendation, PSF

FOAMULAR® XPS Insulation Product	Dead Load	Live Load
404	1,910	1,150
404 RB	1,110	660
604	2,880	1,720
604 RB	1,660	1,000

Product and Packaging Data

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) ¹	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
F-404/404 Ribbed F-404/404 Ribbed								
2"	2 x 24 x 96	4 x 8 x 8	1,536	3,072	8	12	96	Rain channeled on all bottom edges and ribbed channels on the top surfaces
2½"	2.5 x 24 x 96	4 x 8 x 8	1,152	2,880	8	9	72	
3"	3 x 24 x 96	4 x 8 x 8	1,024	3,072	8	8	64	
4"	4 x 24 x 96	4 x 8 x 8	768	3,072	8	6	48	
Ribbed 2"	2 x 24 x 96	4 x 8 x 8	1,536	3,072	8	12	96	
Ribbed 3"	3 x 24 x 96	4 x 8 x 8	1,536	3,072	8	8	64	
F-604/604 Ribbed								
1½"	1.5 x 24 x 96	4 x 8 x 8	2,048	3,072	8	16	128	Rain channeled on all bottom edges.
2"	2 x 24 x 96	4 x 8 x 8	1,536	3,072	8	12	96	
3"	3 x 24 x 96	4 x 8 x 8	1,024	3,072	8	8	64	
Ribbed 1½"	1.5 x 24 x 96	4 x 8 x 8	2,048	3,072	8	16	128	Rain channeled on all bottom edges and ribbed channels on the top surfaces
Ribbed 2"	2 x 24 x 96	4 x 8 x 8	1,536	3,072	8	12	96	
Ribbed 3"	3 x 24 x 96	4 x 8 x 8	1,024	3,072	8	8	64	

1. Product availability and lead times vary by region and by product. Consult your local Owens Corning sales representative for availability and lead times.

Standards and Codes Compliance

- Meets ASTM C578 Type VI (404 and 404 RB) and Type VII (604 and 604 RB)
- UL Classification Certificate U-19712
- Code Evaluation Report UL ER8811-0112
- ASTM E119 Fire Resistance Rated Wall Assemblies¹²
- Meets California Quality Standards; HUD UM #71a
- Compliance verification by RADCO (AA-650)

¹². Visit www.owenscorning.com for more details.

Limited 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.

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 www.owenscorning.com.

Notes

For additional information, refer to the Safe Use Instruction Sheet (SUIS) found in the SDS Database via <http://sds.owenscorning.com>.

Certifications and Sustainable Features

- Certified by SCS Global Services to contain a minimum of 20% recycled content pre-consumer
- 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
- Environmental Product Declaration (EPD) has been certified by UL Environment
- Utilizing FOAMULAR® XPS insulation can help builders achieve green building certifications including the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) certification



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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.

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