FOAMULAR® Tapered Roofing Products
Extruded Polystyrene (XPS) Rigid Foam Insulation

Product Data Sheet

Energy-Saving[1], Moisture Resistant XPS Insulation

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

FOAMULAR® 400 Tapered Insulation: ASTM C578 Type VI, 40 psi minimum

FOAMULAR® 600 Tapered Insulation: ASTM C578 Type VII, 60 psi minimum

Description

Owens Corning™ FOAMULAR® Tapered Roofing Products Extruded Polystyrene (XPS) Rigid Foam Insulation provide performance and value in low slope roofing systems and are designed to be used over structural roof decks. THERMAPINK® tapered roof insulation provides a thermally efficient, moisture-resistant positive drainage slope for use under single-ply or other types of roofing systems.

Tapered roof insulation systems are designed to provide a minimum slope of ¼" per foot, as required by the International Building Code (IBC), toward roof drains or scupper drains leaving no flat areas for ponding. Other slopes are available and provide additional flexibility for design.

The use of FOAMULAR® Tapered Roofing Products Extruded Polystyrene (XPS) Rigid Foam Insulation provides a sustainable roofing solution, helping to prevent ponding and damaging ice buildup in winter, while in summer resisting the growth of fungus and vegetation.

FOAMULAR® Tapered Roofing Products Extruded Polystyrene (XPS) Rigid Foam Insulation are available in three types. Tapered THERMAPINK® 25 (ASTM C578 Type IV) is the most commonly used tapered product, but for applications that require higher compressive strengths, tapered FOAMULAR® 400 (ASTM C578 Type VI) and tapered FOAMULAR® 600 (ASTM C578 Type VII) are available. All FOAMULAR® Tapered Roofing Products Extruded Polystyrene (XPS) Rigid Foam Insulation are closed cell, moisture-resistant rigid foam boards and are made with Owens Corning's patented Hydrovac® process technology under strict quality control measures. This makes it highly resistant to moisture and permits the product to retain its high R-value year after year even after prolonged exposure to moisture, and freeze/thaw cycling.

Owens Corning provides tapered roofing design services with detailed tapered layouts to describe quantities and how the insulation is to be installed. See your Commercial Area Sales Representative to request tapered roofing services or email GETTECH@owenscorning.com or call 1-800-GET-PINK®.

Key Features

- Excellent long-term stable insulating performance at R-5 per inch[2]
- Provides positive slope drainage for low slope roofing assemblies
- Exceptional moisture resistance, long-term durability
- Limited lifetime warranty covers all ASTM C578 properties with a 90% R-value retention.[3]
- The only XPS foam to have achieved GREENGUARD Gold Certification
- The only XPS foam with certified recycled content—certified by Scientific Certification Systems (SCS) 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 the previous formula
- Reusable

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.

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- Lightweight, durable rigid foam panels are easy to handle and install
- Easy to saw, cut or score

Technical Information

The roof designer must specify the number and location of roof drains as well as the minimum roof slope required for projects using Owens Corning™ THERMAPINK® tapered roof insulation. Please note that Chapter 15 of the IBC requires a minimum slope of ¼" per foot for many new construction roofing systems, while requiring only positive slope for reroof systems. Owens Corning™ THERMAPINK® tapered roof insulation is available in ¼" and ⅛" slopes as well as other custom slopes on request.

THERMAPINK® tapered roof insulation has been tested over steel roof decks without a thermal barrier in accordance with UL Standard 1256 and is listed for use direct to deck in accordance with UL Roof Deck Construction #457. If the tapered maximum thickness exceeds that permitted by #457, a thermal barrier may be required. Check local codes for additional requirements. This product is combustible. For additional information, consult MSDS or 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.

Typical Physical Properties[1]

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Property	Test Method[2]	FOAMULAR® Tapered Products		
		Tapered TP25	Tapered F400	Tapered F600
Thermal Resistance[3], R-Value (180 day) minimum, hr•ft²•°F/Btu (RSI, °C•m²/W)	ASTM C518			
@ 75°F (24°C) mean temperature			5.0 (0.88)	
@ 40°F (4.4°C) mean temperature			5.4 (0.95)	
Compressive Strength[4], minimum psi (kPa)	ASTM D1621	25 (172)	40 (276)	60 (414)
Flexural Strength[5], minimum psi (kPa)	ASTM C203	75 (517)	115 (793)	140 (965)
Water Absorption[6], maximum % by volume	ASTM C272	0.10	0.05	0.05
Water Vapor Permeance[7], maximum perm (ng/Pa•s•m²)	ASTM E96	1.5 (86)	1.1 (63)	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		3.5×10^{-5} (6.3×10^{-5})	

1. Properties shown are representative values for 1" thick material, unless otherwise specified.
2. Modified as required to meet ASTM C578.
3. 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.
4. Values at yield or 10% deflection, whichever occurs first.
5. Value at yield or 5%, whichever occurs first.
6. Data ranges from 0.00 to value shown due to the level of precision of the test method.
7. Water vapor permeance decreases as thickness increases.
8. This laboratory test is not intended to describe the hazards presented by this material under actual fire conditions.
9. Data from Underwriters Laboratories Inc.® classified. See Classification Certificate U-197.
10. Smoke Developed is thickness-dependent, therefore a range of values is given.

FOAMULAR® XPS Insulation can be exposed to the exterior during normal construction cycles. During that time some fading of color may begin due to UV 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 covered within 60 days to minimize degradation. Once 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. It is recommended that all THERMAPINK® tapered roof insulation printed surfaces be turned down to minimize potential sun exposure and localized heat accumulation on the print.

FOAMULAR® Extruded Polystyrene 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

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Product and Packaging Data

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Material	Packaging
Extruded polystyrene closed-cell foam, ASTM C578 Type IV, 25 psi minimum	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
THERMAPINK® 25 and FOAMULAR® 600 Tapered Insulation (FOAMULAR® 400 Tapered Insulation only available in E, F and G panels.)							
⅛ slope A	0.5-0.75 x 24 x 96	4 x 8 x 8	4,608	2,880	24	12	288
⅛ slope B	0.75-1 x 24 x 96	4 x 8 x 8	3,456	3,024	18	12	216
⅛ slope C	1-1.25 x 24 x 96	4 x 8 x 8	2,688	3,024	14	12	168
⅛ slope D	1.25-1.5 x 24 x 96	4 x 8 x 8	2,304	3,168	12	12	144
¼ slope E	0.5-1 x 24 x 96	4 x 8 x 8	3,840	2,880	10	12	240
¼ slope F	1-1.5 x 24 x 96	4 x 8 x 8	2,304	2,880	12	12	144
½ slope G	0.5-1.5 x 24 x 96	4 x 8 x 8	2,688	2,688	14	12	168

1. Available lengths and edge configurations vary by thickness. See www.foamular.com for current offerings. Other sizes may be available upon request. Consult your local Owens Corning representative for availability.

Standard Product Availability

FOAMULAR® Tapered Roofing Products

Panel	THERMAPINK® 25 Taper Insulation	FOAMULAR® 400 Taper Insulation	FOAMULAR® 600 Taper Insulation
⅛ slope A	×		×
⅛ slope B	×		×
⅛ slope C	×		×
⅛ slope D	×		×
¼ slope E	×	×	×
¼ slope F	×	×	×
½ slope G	×	×	×

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 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.

Standards, Codes Compliance

- Meets ASTM C 578 Type IV (TP 25), Type VI (FOAMULAR® 400 insulation), Type VII (FOAMULAR® 600 insulation)
- UL (Underwriters Laboratories) Classified. A copy of UL Classification Certificate U-197 is available at www.owenscorning.com
- See ICC-ES Evaluation Report ESR-1061 at www.icc-es.org
- THERMAPINK® 25: UL Roof Deck Constructions, tested in accordance with UL 1256, "Standard for Fire Test of Roof Deck Constructions" including Roof Deck Construction #457.

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FOAMULAR® 400 and 600 were not tested direct to deck and are not included in UL #457 for direct to deck applications.

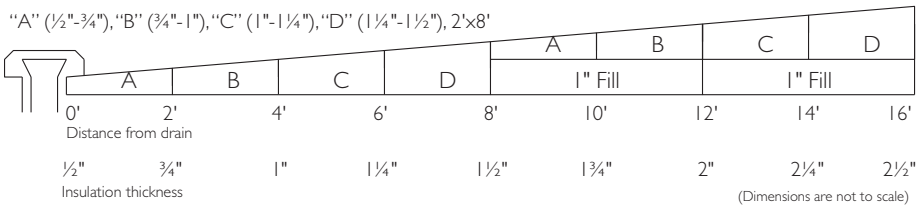
- Refer to www.ul.com "Certifications" or FM Approval RoofNav for details on listings, constructions and assemblies
  - FM (Factory Mutual) Class 1 Roof Decks.
  - ASTM E108 Fire Classified Assemblies.
  - ASTM E119 Fire Resistance Rated Roof/Ceiling Assemblies.
  - UL and FM Wind Uplift Rated Assemblies.
  - Meets California Quality Standards and HUD UM #71a
  - Compliance verification by RADCO (AA-650)

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 Scientific Certification Systems to contain a minimum of 20% pre-consumer recycled polystyrene
- Certified to meet indoor air quality standards under the stringent GREENGUARD Certification Program and GREENGUARD Gold Certification Program

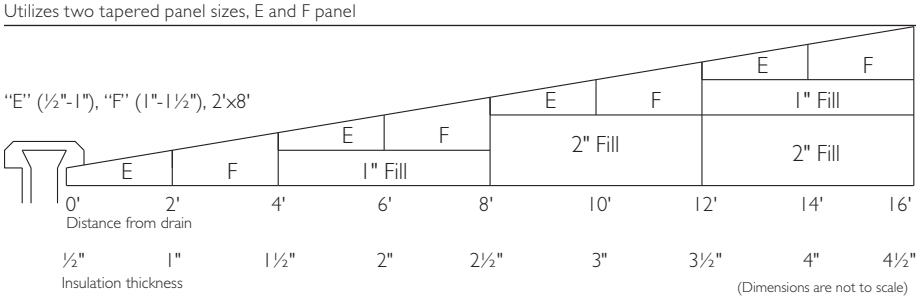
Typical Tapered Roofing Section ⅛" per foot slope

Utilizes four tapered panel sizes, A, B, C and D panel



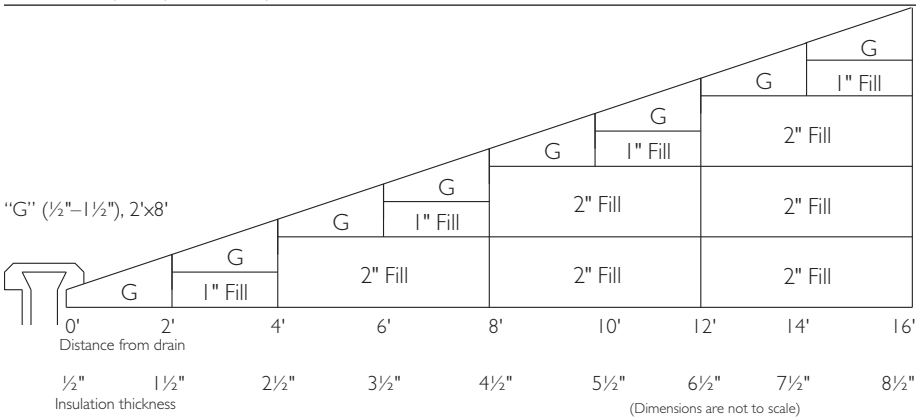
Typical Tapered Roofing Section ¼" per foot slope

Utilizes two tapered panel sizes, E and F panel



Typical Tapered Roofing Section ½" per foot slope

Utilizes one tapered panel size, G panel



THERMAPINK® board is only available in a 4'x8' size. Some boards may need to be field cut to complete the 2' wide fill requirements.

System Average R-Value

Distance from Drain	0'–4'	0'–8'	0'–12'	0'–16'	0'–20'
Average R-value[1] ⅛" slope	3.75	5.00	6.25	7.50	8.75
¼" slope	5.00	7.50	10.00	12.50	15.00
½" slope	7.50	12.50	17.50	22.50	27.50

1. Average R-value @ 75°F (24°C) mean temperature

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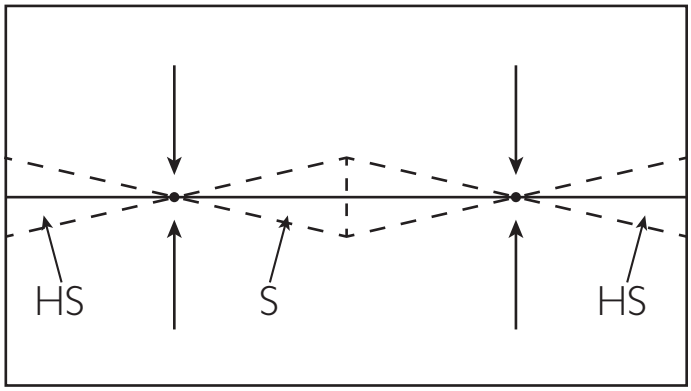
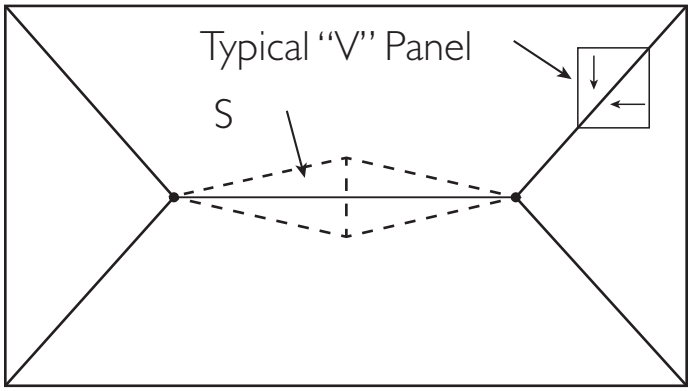
Typical Tapered Layouts

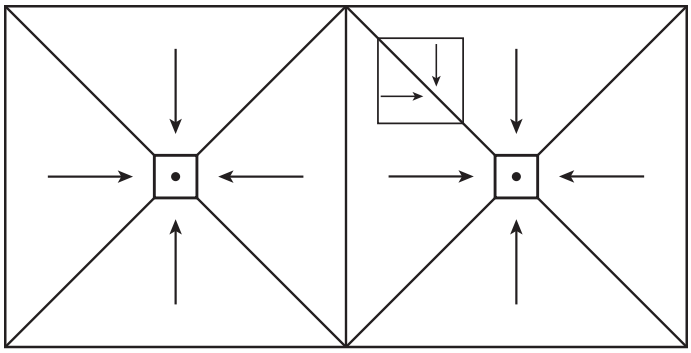
Cricket and saddle material are included in the design package for field fabrication.

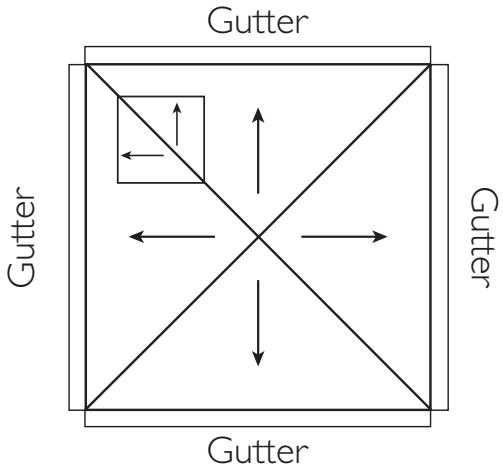




1. Two-Directional Taper System
Utilizes tapered panels installed in two directions, accompanied with saddles ("S") between the drains, and half saddles ("HS") between drains and outside walls. The saddles assist in directing the water flow to the drains.

2. Modified Two-Directional Taper System
Utilizes tapered panels installed primarily in two directions with saddle ("S") placed between the drains; however, two of the four sides utilize mitered valleys. This system is desirable when a constant thickness of insulation is required at the outside perimeter of the roof.





3. Four-Directional Taper System
This system utilizes tapered panels installed in four different directions. Mitered valleys lead to drains.

4. Four-Directional Taper System—Perimeter Drainage
Utilizes a four-way taper system directing the water flow to the outside perimeter. This system may be selected when gutters are employed rather than roof drains. Desired drainage is obtained with the creation of hip miters.

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- Approved under the Home Innovation Research Labs NGBS Green Certification Program
- 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

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 is warranted to maintain 90% of its R-value and to retain all other properties defined in ASTM C578 for the lifetime of the building. See the 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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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.

This Home Innovation Research Labs Green Approved mark is your assurance that a product is eligible for points toward National Green Building Certification. Visit www.GreenApprovedProducts.com for details.

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Pub. No. 10015849-B. Printed in U.S.A. June 2014.

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