

FOAMGLAS[®] CELLULAR GLASS

ES-BUR-01 COMMERCIAL

ROOFING DESIGN GUIDE

FOAMGLAS® cellular glass insulation is a lightweight, rigid, and durable material composed of sealed glass cells. It's non-combustible, provides superior compressive strength, moisture resistance, dimensional stability, and offers long-lasting thermal performance. A range of shapes and sizes are available for commercial roofing applications.

FOAMGLAS Product Specifications

Each FOAMGLAS® insulation product grade – T3+, T4+, S3 and F - offers moisture resistance, ensuring constant thermal efficiency, while providing compressive strength specific to the load requirements. FOAMGLAS® product types can be supplied in tapered, faced, or unfaced board formats.

- It is the most effective system available for commercial applications where long-term reliability and performance are important, or where resistance to moisture is critical.
- FOAMGLAS® insulation is ideal for roofs over high moisture or high humidity-generating facilities and refrigerated buildings.
- FOAMGLAS® insulation has 2.5x higher thermal mass and 4x less coefficient of thermal expansion than polyiso. This combination moderates the effect of rapid changes in outdoor temperature on the membrane, resulting in less movement and increased longevity.
- Because of its inert cellular glass structure, FOAMGLAS® insulation retains its original insulating value for the life of the insulation. It is impervious to moisture in liquid or vapor form. High dimensional stability prevents warping, shrinking, swelling, slumping, or other distortion and helps preserve the integrity of the total roof system. High compressive strength enables FOAMGLAS® insulation to withstand loads that can crush other insulations. FOAMGLAS® unfaced cellular glass insulation is totally inorganic and non-combustible and does not promote flame spread.
- FOAMGLAS® roof insulation provides exceptional long-term roofing system performance when used in conjunction with built-up modified bitumen membranes installed in accordance with Owens Corning and membrane manufacturer specifications.

Refer to FOAMGLAS® T3+ Product Data Sheet

Refer to FOAMGLAS® T4+ Product Data Sheet

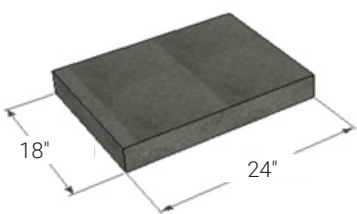
Refer to FOAMGLAS® S3 Product Data Sheet

Refer to FOAMGLAS® F Product Data Sheet

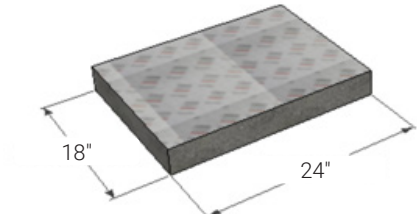


Product Portfolio

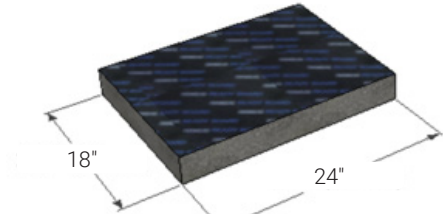
1. FLAT BLOCK; unfaced and faced (top surface only)



Unfaced

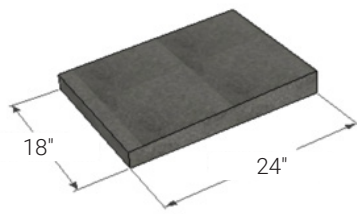


Glass Mat Faced*

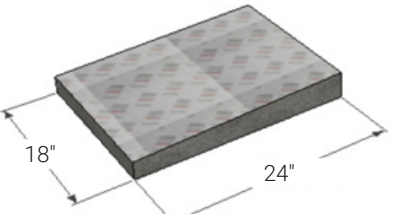


Polyethylene Faced*

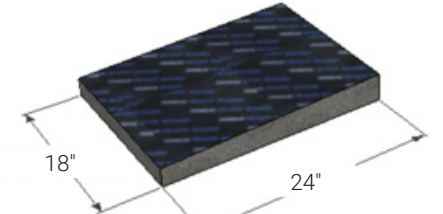
2. TAPERED; unfaced and faced (top surface)



Unfaced

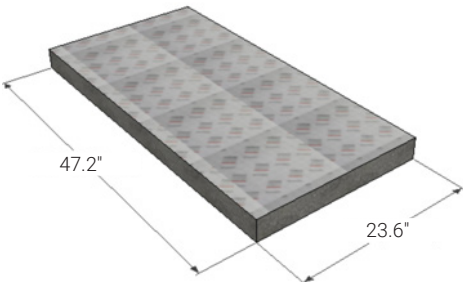


Glass Mat Faced*

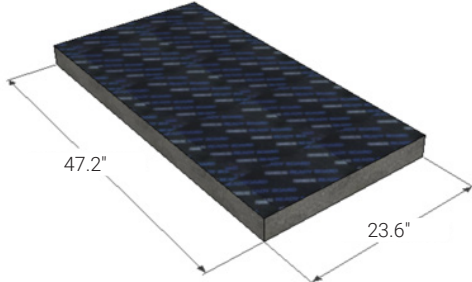


Polyethylene Faced*

3. FLAT BOARD; faced (top and bottom surface)



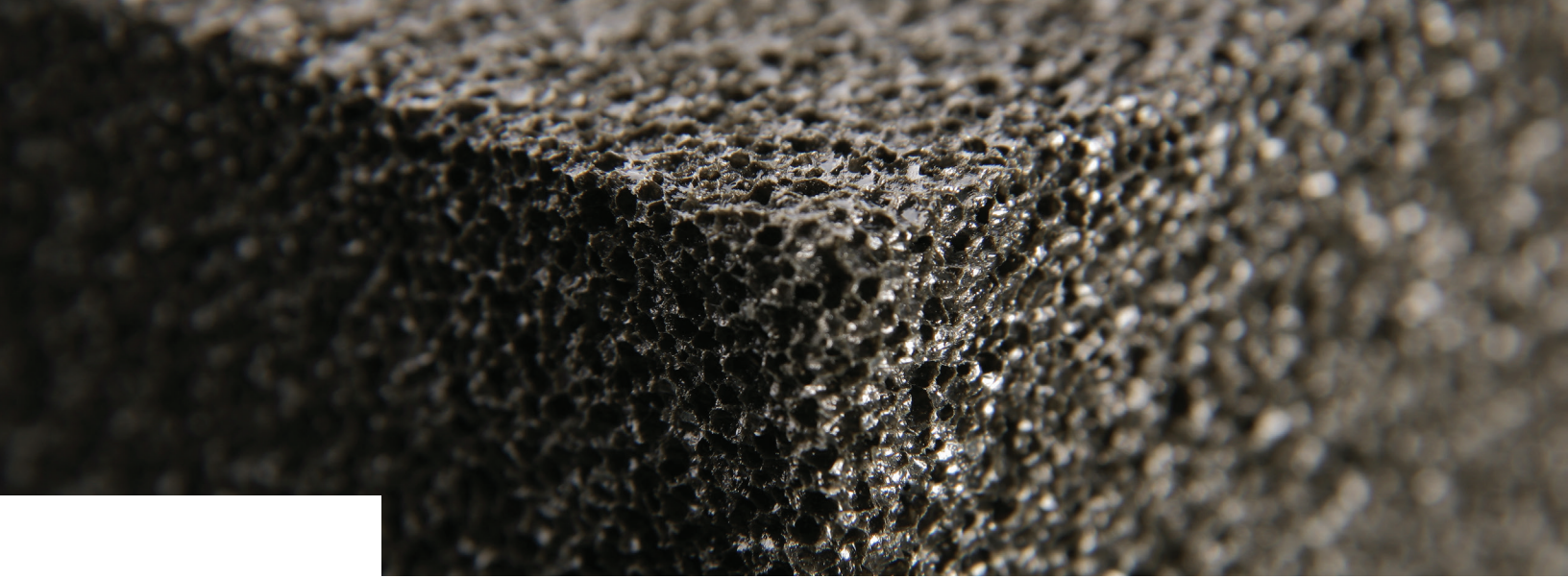
Glass Mat Faced*



Polyethylene Faced*

FOAMGLAS® Flat Block, Tapered, and Flat Board insulation can be combined into systems to meet the drainage and thermal resistance requirements of any size or type roof.

*Available by special request. Please contact GETTECH@OwensCorning.com. Minimum order quantities and additional lead times may apply. Product will be available in metric dimensions.



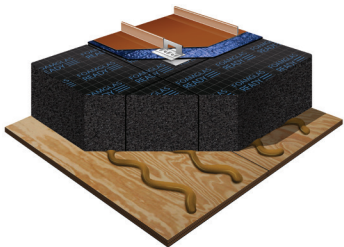
Flat Block, Tapered Block, and Flat Board Sizes (thickness increment 10 mm)

FOAMGLAS® Cellular Glass Roofing Insulation Products: Typical Physical Properties

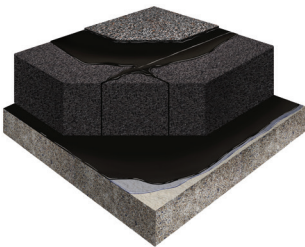
PRODUCT	THICKNESS (INCHES)	LENGTH X WIDTH (INCHES)	THERMAL RESISTANCE @ 75F (R-VALUE/INCH)	THERMAL RESISTANCE @ 75F (TOTAL R-VALUE)	COMPRESSIVE STRENGTH (CAPPED), MINIMUM PSI (kPa)
T3+	Contact Owens Corning	Contact Owens Corning	R-3.8	Contact Owens Corning	72 (500)
T4+	1.5	24 X 18 (Contact Owens Corning for additional dimensions)	R-3.4	R-5.0	87 (600)
	2			R-6.7	
	2.5			R-8.3	
	3			R-10	
	3.5			R-11.7	
	4			R-13.3	
	4.5			R-15	
	5			R-16.7	
	5.5			R-18.3	
	6			R-20	
	6.5			R-21.7	
	7			R-23.8	
S3	2	24 X 18 (Contact Owens Corning for additional dimensions)	R-3.0	R-6	130 (900)
	2.5			R-7.5	
	3			R-9	
	3.5			R-10.5	
	4			R-12	
	4.5			R-13.5	
	5			R-15	
	5.5			R-16.5	
	6			R-18	
	6.5			R-19.5	
	7			R-21	
F	Contact Owens Corning	Contact Owens Corning	R-2.8	Contact Owens Corning	232 (1600)

Facers

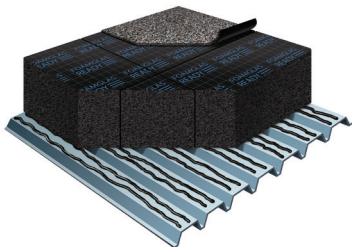
Facer material, including Fiberglas™ reinforced or modified bitumen with sacrificial polyethylene, may be available in both block and board sized by special order. These materials are adhered to the unfaced cellular glass on top and bottom to aid in adhesion of materials — both the cellular glass to substrates and roof membranes to the cellular glass. The roof membrane should be compatible with the selected facer. Fiberglas™ facers are often used with adhesives required by single-ply membrane manufacturers to secure the membrane. Modified bitumen is applied with a sacrificial polyethylene facer for torch adhesion under BUR roof membrane assemblies. Other roof systems may not require a facer — such as hot rubberized asphalt. Please contact your local FOAMGLAS® roofing representative or GETTECH@owenscorning.com.



**Wood Deck Arch Metal Adhesive
Fastened with Cellular Glass**



**Concrete Deck BUR with
Cellular Glass**



**Metal Deck BUR with
Cellular Glass**

Roof Substrate Requirements

When FOAMGLAS® roof insulation is installed over a concrete deck, best practices use a compatible adhesive to secure material during installation. Please note that Primer may also be required. Contact your local FOAMGLAS® roof representative or GETTECH@owenscorning.com.

Concrete Deck Criteria

- Surface Variation (flatness) — The deck shall be clean and dry. Irregularities of the substrate should not exceed 0.12" per 23.6" or 0.20" per 7'.
- Pre-cast Beams — Irregularities at mating edges should not exceed 0.12".

Steel Deck Criteria

When FOAMGLAS® roof insulation is installed over a steel deck, designers may first install a roof sheathing, such as glass mat reinforced gypsum board or plywood, or secure the FOAMGLAS® directly over the steel deck flutes, as long as the FOAMGLAS® thickness meets the minimum requirements listed below. Best practice includes securing the cellular glass to the tops of ribs with compatible adhesives. Contact your local FOAMGLAS® roof representative or GETTECH@owenscorning.com.

Thickness of the Metal	Minimum 21 gauge (0.028")
Rib Width	Maximum 60% of the Total Surface
Maximum Deflection (under maximum load)	1/240 of the span if the height of the corrugations is less than 3½" 1/300 of the span if the height of the corrugations is equal or to more than 3½" (measured without FOAMGLAS®)

Minimum Insulation Thickness

STEEL DECK TYPE	RIB OPENING, WIDTH	FOAMGLAS® THICKNESS
Narrow Rib (Type A)	1"	2" (50 mm)
Intermediate Rib (Type F)	1 ³ / ₄ "	2" (50 mm)
Wide Rib (Type B)	2 ⁵ / ₈ "	2" (50 mm)
Deep Rib (Type B/BW/3DR)	2 ³ / ₄ "	2" (50 mm)
Long Span	3 ³ / ₈ "	2.4" (60 mm)
Long Span	4 ³ / ₈ "	2.8" (70 mm)
Long Span	6"	3.1" (80 mm)

The metal sheets are fastened in the troughs of the corrugations to the purlins following guidelines of the steel manufacturer.

Wood Deck Criteria

- Surface Variation (flatness) – The deck shall be clean and dry. Irregularities of the substrate should not exceed 0.12" per 23.6" or 0.20" per 7'.
- Pre-cast Beams – Irregularities at mating edges should not exceed 0.12".

Curved Roof Criteria

Curved roofs require matching the slab dimension based on the radius of the curve.

RADIUS OF THE CURVE, FT. (M)	DIMENSION OF THE FOAMGLAS® SLABS, IN. (MM)
5' to 11' (1.5m to 3.5m)	5.9" x 17.7" (150mm x 450mm)
11' to 18' (3.5m to 5.6m)	8.9" x 23.6" (225mm x 600mm)
18' to 41' (5.6m to 12.6m)	11.8" x 17.7" (300mm x 450mm)
> 41' (12.6m)	17.7" x 23.6" (450mm x 600mm)

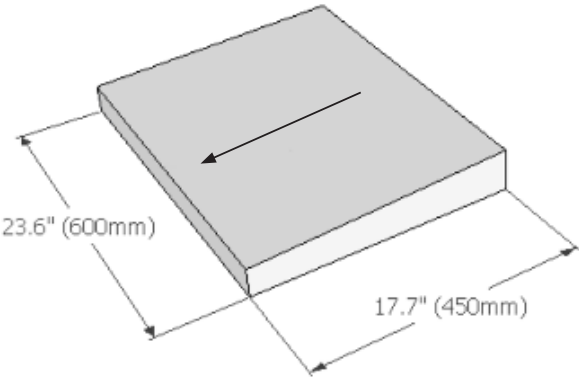
Tapered Product

Tapered FOAMGLAS® insulation provides positive slope to drain water while exhibiting maximum membrane support and minimum thermal expansion.

Standard Tapered FOAMGLAS® Insulation Sizes

Product is available in standard slopes: 1⁄8" per foot, 1⁄4" per foot,* and 1⁄2" per foot.

Note: 1⁄4" per foot is minimum required per ibc. See data sheet for more information. Refer to FOAMGLAS® Tapered Design Guide.



Moisture Resistance in Commercial Roofs

Cellular Glass insulation is waterproof. However, open, exposed cells on the outer cut surface of the insulation should be protected from damage from any freezing water. Best practices include sealing with waterproofing coatings, installing so that any faced material is placed facing upward on horizontal surfaces, sloping the roof for positive drainage, and integration of drainage composites in the roof assembly. Please contact Owens Corning at GETTECH@owenscorning.com for guidance regarding protection from freezing water.

Fire Resistance in Commercial Roofs

- ASTM E108 Fire Classified Assemblies
- ASTM E119 Fire Resistance Rated Roof Assemblies
- UL (Underwriters Laboratories) Roof Deck Constructions, tested in accordance with UL 1256
- FM (Factory Mutual) Class 1 Roof Decks

Wind Resistance in Commercial Roofs

- UL and FM Wind Uplift Rated Assemblies
- See www.owenscorning.com for technical bulletins for specific standards

Attachment

Adhesives

FOAMGLAS® is compatible with a variety of adhesives, including many solvent-based options. Compatibility should be verified with the manufacturer. Caution should be taken with moisture-curing products due to the impermeable nature of the cellular glass. These products may be acceptable on top of the cellular glass or separated with sheathing materials.

Mechanical Fasteners

When mechanical fasteners are required for securing the insulation and/or the roof membrane, plates should be used to prevent pull-through damage and distribute loading. Assembly listings may designate specific mechanical fasteners to meet performance requirements. Please contact Owens Corning at GETTECH@owenscorning.com for guidance regarding mechanical fasteners.

Installation

For specific installation instructions based on roof system and substrate, please see the Owens Corning FOAMGLAS® Roof Installation Guide.

Specifications

Because FOAMGLAS® insulation may be uniquely embedded into the waterproofing layer, it may be specified as an accessory to the insulation rather than its recommended location under Roof Board Insulation. Guide Specifications are provided for both the product and for the product integrated into various Enclosure Solutions Assemblies at www.owenscorning.com/foamglas and www.owenscorning.com/enclosure.

Maintenance

Normal inspection and maintenance of the roofing system on a yearly basis is recommended. Membrane manufacturers may require specific maintenance and inspection documentation. Refer to their specific warranty requirements.

Environment 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.

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