



# FOAMGLAS<sup>®</sup> CELLULAR GLASS INSULATION FOR COMMERCIAL ROOFING APPLICATIONS

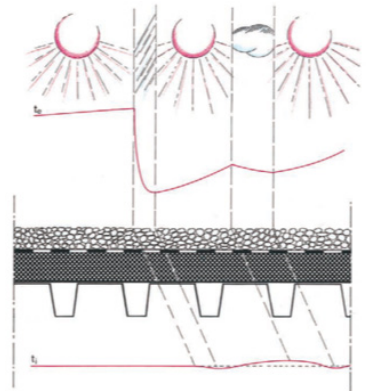
## TECHNICAL GUIDE

FOAMGLAS<sup>®</sup> 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 wide range of shapes and sizes are available for commercial roofing applications.

### PRODUCT OFFERING

Each FOAMGLAS<sup>®</sup> type; T3+, T4+, S3 and F insulation product offers moisture resistance, ensuring constant thermal efficiency, while providing compressive strength specific to the load requirements. FOAMGLAS<sup>®</sup> product types can be supplied in tapered, faced or flat 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<sup>®</sup> insulation is ideal for roofs over high moisture or high humidity-generating facilities and refrigerated buildings.
- FOAMGLAS<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> insulation to withstand loads that can crush other insulations. FOAMGLAS<sup>®</sup> unfaced cellular glass insulation is totally inorganic and noncombustible and does not promote flame spread or generate toxic fumes.
- FOAMGLAS<sup>®</sup> 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.



PROPERTY	TEST METHOD	T3+ VALUES	T4+ VALUES	S3 VALUES	F VALUES
Density, minimum pcf (kg/m <sup>3</sup> )	ASTM C303	5.0 (80)	5.5 (88)	6.9 (110)	8.5 (136)
Compressive Strength (capped), minimum psi (kPa)	ASTM C165 Procedure A / ASTM C240	72 (500)	87 (600)	130 (900)	232 (1600)
Thermal Resistance per inch @ 75°F (24°C) mean temperature <sup>1</sup> , Hr-ft <sup>2</sup> -°F/BTU (m <sup>2</sup> - °C/W)	ASTM C518/ ASTM C177	3.8 (0.67)	3.4 (0.59)	3.0 (0.54)	2.8 (0.49)

For additional product information, please refer to each individual Product Data Sheet.

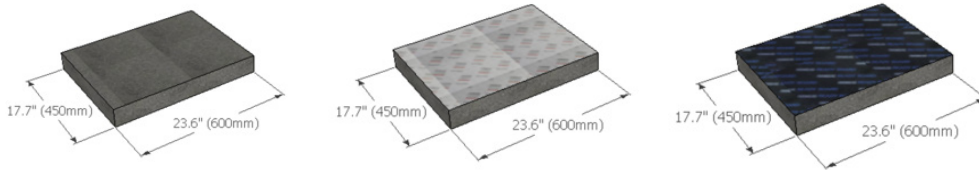
1. R means the resistance to heat flow; the higher the value, the greater the insulation power. This insulation must be installed properly to get the marked R-value. Follow the manufacturer's instructions carefully.

### ROOF APPLICATIONS

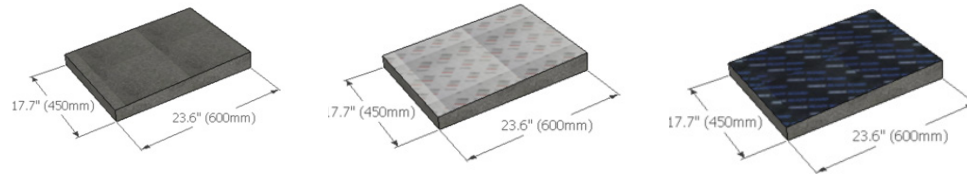
PRODUCT	FLAT	PLAZA	VEGETATIVE	SOLAR	METAL	TRAFFIC	HEAVY TRAFFIC
T3+	•	•	•	•			
T4+	•	•	•	•	•		
S3	•	•	•	•	•	•	
F	•	•	•	•	•	•	•

## AVAILABILITY

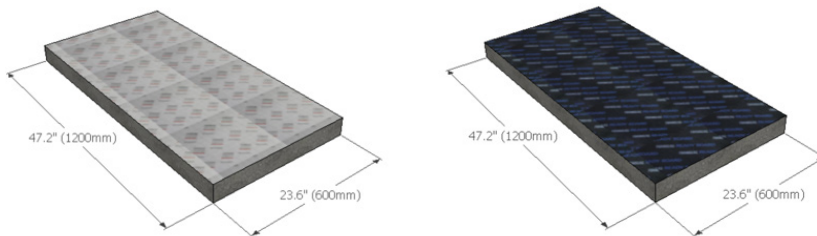
### 1. FLAT BLOCK; unfaced and faced (top surface only)



### 2. TAPERED; unfaced and faced (top surface)



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



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.

## FLAT BLOCK, TAPERED BLOCK AND FLAT BOARD SIZES (THICKNESS INCREMENTS 10MM)

PRODUCT	FACING	MIN. THICKNESS	MAX THICKNESS	WIDTH	LENGTH
T3+ Block & Tapered Block	Unfaced	1.9" (50mm)	7.9" (200mm)	17.7" (450mm)	23.6" (600mm)
	Ready Block				
	Roof Block G1				
T4+ Block & Tapered Block	Unfaced	1.6" (40mm)	7.9" (200mm)	17.7" (450mm)	23.6" (600mm)
	Ready Block	1.9" (50mm)			
S3 Block & Tapered Block	Unfaced	1.6" (40mm)	7.9" (200mm)	17.7" (450mm)	23.6" (600mm)
	Ready Block	1.9" (50mm)			
F Block & Tapered Block	Unfaced	1.6" (40mm)	7.1" (180mm)	17.7" (450mm)	23.6" (600mm)
	Ready Block	1.9" (50mm)			
T3+ Board	Ready	1.9" (50mm)	7.9" (200mm)	23.6" (600mm)	47.2" (1200mm)
	Roof Board G2				
T4+ Board	Ready Board	1.6" (40mm)	7.9" (200mm)	23.6" (600mm)	47.2" (1200mm)

## FACERS

PRODUCT	TOP SURFACE			BOTTOM SURFACE		
	UNFACED	BITUMEN COATED WITH A SACRIFICIAL POLYETHYLENE PROTECTIVE SHEET DESIGNED FOR TORCH-ON MEMBRANES APPLIED TO UPPER SURFACE.	BITUMEN ADHERED FIBERGLASS FLEECE FACER DESIGNED FOR MECHANICAL ATTACHED OR FULLY ADHERED MEMBRANES TO THE UPPER SURFACE.	UNFACED	BITUMEN ADHERED FIBERGLASS FLEECE FACER DESIGNED FOR HOT OR COLD APPLIED ADHESION TO ROOF DECK OR MULTIPLE LAYER SYSTEMS.	
Block	T3+, T4+, S3, F			T3+, T4+, S3, F		
Ready Block		T3+, T4+, S3, F		T3+, T4+, S3, F		
Ready Board		T3+, T4+			T3+, T4+	
Roof Block G1			T3+	T3+		
Roof Board G2			T3+		T3+	

## THERMAL RESISTANCE VALUES OF FOAMGLAS® INSULATION

THERMAL RESISTANCE; R-VALUE<sup>1</sup>, HR • FT<sup>2</sup> • °F/BTU (RSI, °C • M<sup>2</sup>/W)

THICKNESS	T3+			T4+			S3			F		
	75°F (24°C) MEAN TEMP.	50°F (10°C) MEAN TEMP.	25°F (-4°C) MEAN TEMP.	75°F (24°C) MEAN TEMP.	50°F (10°C) MEAN TEMP.	25°F (-4°C) MEAN TEMP.	75°F (24°C) MEAN TEMP.	50°F (10°C) MEAN TEMP.	25°F (-4°C) MEAN TEMP.	75°F (24°C) MEAN TEMP.	50°F (10°C) MEAN TEMP.	25°F (-4°C) MEAN TEMP.
1.5" (40mm)				<b>5.4</b>	5.5	6.1	<b>4.7</b>	5	5.5	<b>4.4</b>	4.6	5
2" (50mm)	<b>7.5</b>	7.9	8.3	<b>6.7</b>	6.9	7.7	<b>5.9</b>	6.3	6.9	<b>5.5</b>	5.7	6.3
2.4" (60mm)	<b>9.0</b>	9.4	9.9	<b>8.0</b>	8.3	9.2	<b>7.1</b>	7.6	8.3	<b>6.6</b>	6.9	7.6
2.8" (70mm)	<b>10</b>	11	12	<b>9.4</b>	9.6	11	<b>8.3</b>	8.8	9.6	<b>7.7</b>	8.0	8.8
3.1" (80mm)	<b>12</b>	13	13	<b>11</b>	11	12	<b>9.4</b>	10	11	<b>8.8</b>	9.1	10
3.5" (90mm)	<b>13</b>	14	15	<b>12</b>	12	14	<b>11</b>	11	12	<b>9.9</b>	10	11
3.9" (100mm)	<b>15</b>	16	17	<b>13</b>	14	15	<b>12</b>	13	14	<b>11</b>	11	13
4.3" (110mm)	<b>16</b>	17	18	<b>15</b>	15	17	<b>13</b>	14	15	<b>12</b>	13	14
4.7" (120mm)	<b>18</b>	19	20	<b>16</b>	17	18	<b>14</b>	15	17	<b>13</b>	14	15
5.1" (130mm)	<b>19</b>	20	21	<b>17</b>	18	20	<b>15</b>	16	18	<b>14</b>	15	16
5.5" (140mm)	<b>21</b>	22	23	<b>19</b>	19	21	<b>17</b>	18	19	<b>15</b>	16	18
5.9" (150mm)	<b>22</b>	24	25	<b>20</b>	21	23	<b>18</b>	19	21	<b>17</b>	17	19
6.3" (160mm)	<b>24</b>	25	26	<b>21</b>	22	25	<b>19</b>	20	22	<b>18</b>	18	20
6.7" (170mm)	<b>25</b>	27	28	<b>23</b>	23	26	<b>20</b>	21	23	<b>19</b>	19	21
7.1" (180mm)	<b>27</b>	28	30	<b>24</b>	25	28	<b>21</b>	23	25	<b>20</b>	21	23
7.5" (190mm)	<b>28</b>	30	31	<b>25</b>	26	29	<b>22</b>	24	26	<b>21</b>	22	24
7.9" (200mm)	<b>30</b>	31	33	<b>27</b>	28	31	<b>24</b>	25	28	<b>22</b>	23	25

1. R-values vary depending on many factors including the mean temperature at which the test is conducted. The U.S. FTC requires the R-value of home insulation to be measured at 75 degrees F mean temperature. R-value claims should always be compared at the same Mean Temperature. The R-value for FOAMGLAS® Cellular Glass Insulation is provided from testing at mean temperatures, 25°F, 50°F and 75°F. Per 16CRF460.11; R-values of 10 and above may be rounded to nearest whole number.

## ROOF SUBSTRATE REQUIREMENTS

### 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

Thickness of the Metal	minimum 21 gauge (0.028")
Rib Width	maximum 60% of the Total Surface
Maximum Deflection (under maximum load)	<b>1/240</b> of the span if the height of the corrugations is less than <b>3 1/2"</b> <b>1/300</b> of the span if the height of the corrugations is equal or more than <b>3 1/2"</b> (Measured without FOAMGLAS®)

### MINIMUM INSULATION THICKNESS

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

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

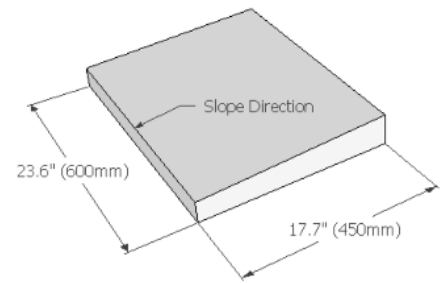
### Curved Roof Criteria

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

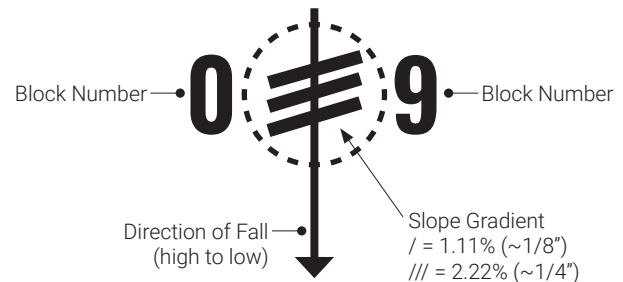
### ~ 1/8" SLOPE (1.11%)

BLOCK NUMBER	MIN THICKNESS	MAX THICKNESS
1	1.57" (40mm)	1.77" (45mm)
2	1.77" (45mm)	1.97" (50mm)
<b>3*</b>	<b>1.97" (50mm)</b>	<b>2.17" (55mm)</b>
4	2.17" (55mm)	2.36" (60mm)
5	2.36" (60mm)	2.56" (65mm)
6	2.56" (65mm)	2.76" (70mm)
7	2.76" (70mm)	2.95" (75mm)
8	2.95" (75mm)	3.15" (80mm)
9	3.15" (80mm)	3.35" (85mm)
10	3.35" (85mm)	3.54" (90mm)
11	3.54" (90mm)	3.74" (95mm)
12	3.74" (95mm)	3.94" (100mm)
13	3.94" (100mm)	4.13" (105mm)
14	4.13" (105mm)	4.33" (110mm)
15	4.33" (110mm)	4.53" (115mm)
16	4.53" (115mm)	4.72" (120mm)
17	4.72" (120mm)	4.92" (125mm)
18	4.92" (125mm)	5.12" (130mm)
19	5.12" (130mm)	5.31" (135mm)
20	5.31" (135mm)	5.51" (140mm)
21	5.51" (140mm)	5.71" (145mm)
22	5.71" (145mm)	5.91" (150mm)
23	5.91" (150mm)	6.10" (155mm)
24	6.10" (155mm)	6.30" (160mm)
25	6.30" (160mm)	6.50" (165mm)
26	6.50" (165mm)	6.69" (170mm)
27	6.69" (170mm)	6.89" (175mm)
28	6.89" (175mm)	7.09" (180mm)
29	7.09" (180mm)	7.28" (185mm)
30	7.28" (185mm)	7.48" (190mm)
31	7.48" (190mm)	7.68" (195mm)
32	7.68" (195mm)	7.87" (200mm)

### ~ 1/8" SLOPE (1.11%)

BLOCK NUMBER	MIN THICKNESS	MAX THICKNESS
1	1.57" (40mm)	1.97" (50mm)
<b>2*</b>	<b>1.97" (50mm)</b>	<b>2.36" (60mm)</b>
3	2.36" (60mm)	2.76" (70mm)
4	2.76" (70mm)	3.15" (80mm)
5	3.15" (80mm)	3.54" (90mm)
6	3.54" (90mm)	3.94" (100mm)
7	3.94" (100mm)	4.33" (110mm)
8	4.33" (110mm)	4.72" (120mm)
9	4.72" (120mm)	5.12" (130mm)
10	5.12" (130mm)	5.51" (140mm)
11	5.51" (140mm)	5.91" (150mm)
12	5.91" (150mm)	6.30" (160mm)
13	6.30" (160mm)	6.69" (170mm)
14	6.69" (170mm)	7.09" (180mm)
15	7.09" (180mm)	7.48" (190mm)
16	7.48" (190mm)	7.87" (200mm)

## Tapered Block Factory Markings



\*Tapered T3+ and all Tapered Ready Block have minimum thickness of 1.97" (50mm).

## Applicable Standards

- UL (Underwriters Laboratories) Roof Deck Constructions, tested in accordance with UL 1256
- FM (Factory Mutual) Class 1 Roof Decks
- ASTM E108 Fire Classified Assemblies
- ASTM E119 Fire Resistance Rated Roof Assemblies
- UL and FM Wind Uplift Rated Assemblies
- Compliance verification by R.J. Lee Group
- See [www.OwensCorning.com](http://www.OwensCorning.com) for technical bulletins for specific standards

## Installation

See Owens Corning 3-part specification available at [www.owenscorning.com](http://www.owenscorning.com).

## 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.

## Availability and Cost

Availability: FOAMGLAS® cellular glass insulation is imported from Europe and supplied through a network of US nationwide distributors. Products are made to order and may require extended lead-times. This should be taken into consideration when placing orders to meet production schedules.

ALL ORDERS WILL BE PLACED IN METRIC DIMENSIONS.

Cost: Contact a Owens Corning FOAMGLAS® distributor for cost information. Call 1-800-Get-Pink for the nearest distributor.

## Technical Service

Owens Corning's Technical Service Staff provides product, application and materials testing, specifications and installation guidance. Contact [GetTech@owenscorning.com](mailto:GetTech@owenscorning.com).

## Environment and Sustainability

FOAMGLAS® cellular glass insulation is certified by natureplus institute SCE to contain a minimum of 60% recycled glass (external production waste, building site waste, post-consumer waste) – certificate 0406-1101-101-1.

Environmental Product Declaration (EPD) has been certified by IBU (Institut Bauen und Umwelt e.V.) – certificate EPD-PCE-20150042-IBA1-EN. Meets the requirements of CA CDPH SM V1.2 for VOC emissions and formaldehyde; French VOC Emissions Class A+.



Pittsburgh Corning, LLC  
One Owens Corning Pkwy  
Toledo, OH 43659

For web-based Sales and Technical Service inquiries,  
please visit [www.foamglas.com](http://www.foamglas.com)

To contact by phone or email:

### Industrial & Commercial Sales

#### Americas

+1 800 327 6126

#### Asia-Pacific

Singapore: +65 9635 9184

China: +86 (0) 21 6101 7179

Japan: +81 3 6365 4307

#### Europe, Middle East & Africa

+32 13 661 721

### Technical Services

#### Americas & Asia Pacific

+1 800 327 6126

[Foamglastechnical@owenscorning.com](mailto:Foamglastechnical@owenscorning.com)

#### Europe, Middle East & Africa

+32 13 611 468

[Industrytechnical@foamglas.com](mailto:Industrytechnical@foamglas.com)

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