# **Product Profile**

The Thermal Insulation System.

**FOAMGLAS**Building













## **FOAMGLAS®** Applications

## **FOAMGLAS**



### **Ground insulation systems**





Foundation raft, floor, sub-soil wall



#### Façade insulation systems









Curtain wall, rendered façade, cavity wall, solar façade



#### Interior insulation systems







Floor, wall, ceiling/soffit



#### **FOAMGLAS®** Compact Roof systems













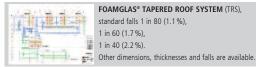
Compact Roof without service or protective layer, Compact Roof with gravel, Green Compact Roof, Compact Roof trafficked/car park decks, Compact Roof with sheet metal covering, Solar Compact Roof



#### Special insulation systems







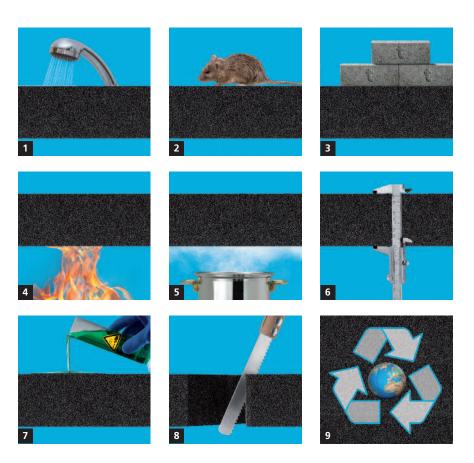
FOAMGLAS® TAPERED ROOF SYSTEM (TRS), standard falls 1 in 80 (1.1%), 1 in 60 (1.7 %), 1 in 40 (2.2%).

FOAMGLAS® PERINSUL (Cold-bridge insulation block), FOAMGLAS® TAPERED ROOF SYSTEM (System with cut-to-falls insulation slabs)

## **Overview of Product Properties**

- **1 Waterproof** FOAMGLAS® is waterproof because it consists of closed cell cellular glass. **Advantage:** does not absorb any moisture and does not swell.
- **2 Pest-proof** FOAMGLAS® cannot rot and is pest-proof because it is inorganic. **Advantage:** insulation without risk, especially in the base area and the soil. No basis for nesting, breeding or seed germination.
- **3 Compression-proof** FOAMGLAS® has high compressive strength even with long-term loads due to its cell geometry without deformation. **Advantage:** use as load-bearing thermal insulation without risk.
- **4 Incombustible** FOAMGLAS® is incombustible because it consists of pure glass. Fire behaviour: Classification according to EN 13501: A1. **Advantage:** storage and processing not hazardous. No propagation of flames. In the event of fire, does not develop smoke or toxic gases.
- **5 Vapour-tight** FOAMGLAS® is vapour-tight because it consists of hermetically sealed glass cells. **Advantage:** cannot soak through and already contains the vapour barrier. Constant thermal insulation value over decades. Prevents the penetration of radon.
- **6** Dimensionally stable FOAMGLAS® is dimensionally stable because glass neither shrinks nor swells. **Advantage:** no warping, buckling or creep. Low coefficient of expansion, nearly equal to that of steel and concrete.

- **7 Acid-resistant** FOAMGLAS® is resistant to organic solvents and acids because it consists of pure glass. **Advantage:** no destruction of the insulation by aggressive mediums and atmospheres.
- **8 Easy to work with** FOAMGLAS® is easy to work with because it consists of thin-walled glass cells. **Advantage:** with simple tools like a saw blade or hand saw, FOAMGLAS® can be cut to any desired measurement.
- **9 Ecological** FOAMGLAS® is free of environmentally damaging flame-retardants protection agents, propellants and consists of over 66 % of high value recycling glass. Only regenerative electricity is used in the manufacturing process. **Advantage:** After decades of use as thermal insulation, FOAMGLAS® can be ecologically recycled and be re-used as a granulate.



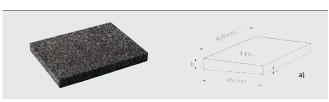
## **Additional Characteristics**

Composition	Pure glass with a high percentage of recycled glass, inorganic and without binding agent additions		
Applicable limit temperatures	From -260°C to +430°C		
Melting point (cf. DIN 4102-17)	> 1000°C		
Water absorption	0 (aside from the surfaces in the area of the attached cells)		
Biological influences	Resistant against microbes as well as against rodent and piercing animals, insects/vermin		
Water vapour diffusion resistance figure	µ = ∞		
Capillarity and hygroscopicity	None		
Fire behaviour (EN 13501-1)	A1		
Dimensional stability	Does not swell and shrink, warp or creep		
Airborne sound reduction	28 dB at 100 mm thickness (in the mid range frequency area)		

## **FOAMGLAS® Slabs**

#### **Product data**





EN 13167	FOAMGLAS® W+F	FOAMGLAS® T4+	FOAMGLAS® S3	FOAMGLAS® F
Dimensions in mm* thickness Length 600 mm, Width 450 mm**	40-160 ***	40-180 ***	40-180 ***	40-160 ***
<b>Density</b> (± 10%) [kg/m³]	100	115	130	165
$\begin{tabular}{lll} \hline & & & \\ \hline & & \\ \hline & & & \\ \hline & \\ \hline & & \\ \hline \\ \hline$	≤ 0.038	≤ 0.041	≤ 0.045	≤ 0.050
Fire behaviour (EN 13501-1)	A1	A1	A1	A1
Melting point (cf. DIN 4102-17)	> 1000 °C	> 1000 °C	> 1000 °C	> 1000 °C
Compressive strength CS external surveillance, (EN 826, Annex A) [kPa]	≥ 400	≥ 600	≥ 900	≥ 1600
Bending strength BS (EN 12089) [kPa]	_	≥ 450	≥ 500	≥ 550
Tensile strength TR (EN 1607) [kPa]	≥ 100	≥ 100	≥ 100	≥ 150
Thermal expansion coefficient [K <sup>-1</sup> ]	9 · 10 <sup>-6</sup>	9 · 10 - 6	9 · 10 <sup>-6</sup>	9 · 10 <sup>-6</sup>
Specific heat [kJ/(kg·K)]	1.0	1.0	1.0	1.0
Thermal diffusivity at 0 °C (m²/s)	4.4 · 10 <sup>-7</sup>	4.2 · 10 <sup>-7</sup>	4.1 · 10 <sup>-7</sup>	3.5 · 10 <sup>-7</sup>
Water vapour resistance (EN ISO 10456)	$\mu = \infty$ (impervious to water vapour)	$\mu = \infty$ (impervious to water vapour)	$\mu = \infty$ (impervious to water vapour)	$\mu = \infty$ (impervious to water vapour)
Specific national product data				
Flexural modulus of elasticity E [MN/m²]	_	700	1200	1500
BRE Green Guide Rating	A+	A	A	В
Green Rating by thefuturebuild.com, by Masdar	A	A	A	A
Application area	– Walls – Façades	<ul><li>Roofs, green roofs</li><li>Floors, foundation rafts</li><li>Façades</li></ul>	<ul><li>Green roofs</li><li>Parking roofs, decks</li><li>Floors, foundation rafts</li></ul>	<ul><li>Floors</li><li>Foundation rafts</li><li>Multipurpose roofs</li></ul>

FOAMGLAS® TAPERED ROOF SYSTEM (TRS), standard falls 1 in 80 (1.1 %), 1 in 60 (1.7 %), 1 in 40 (2.2 %). Other dimensions, thicknesses and falls are available on request. a) FOAMGLAS® Tapered Roof Design, comprising estimation, calculation, installation plans and building site logistics is a service by Pittsburgh Corning CAD-department to best assist architects and engineers. For more information, see page 11.

Other dimensions and thicknesses are available on request. Tolerances according to EN 13167.

For insulation thicknesses > 140 mm, it is recommended to, apply 2 layers on the flat roof.

## **FOAMGLAS®** Boards

#### **Product data**









EN 13167	FOAMGLAS® WALL BOARD W+F	FOAMGLAS® FLOOR BOARD T4+	FOAMGLAS® FLOOR BOARD S3	FOAMGLAS® FLOOR BOARD F
Dimensions in mm* thickness Length 1200 mm, Width 600 mm**	40 – 140	40 – 180	40 – 180	40-160
<b>Density</b> (± 10%) [kg/m³]	100	115	130	165
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	≤0.038	≤ 0.041	≤ 0.045	≤ 0.050
Fire behaviour (DIN 4102-1) Core material Euro-standard A1	F B2	F B2	F B2	F B2
Compressive strength CS external surveillance, (EN 826, Annex A) [kPa]	≥ 400	≥ 600	≥ 900	≥ 1600
Bending strength BS (EN 12089) [kPa]	_	≥ 450	≥ 500	≥ 550
Tensile strength TR (EN 1607) [kPa]	≥ 100	≥ 100	≥ 100	≥ 150
Thermal expansion coefficient [K-1]	9 · 10 - 6	9 · 10 - 6	9 · 10 - 6	9 · 10 - 6
Specific heat [kJ/(kg·K)]	1.0	1.0	1.0	1.0
Thermal diffusivity at 0 °C (m²/s)	4.4 · 10 <sup>-7</sup>	4.4 · 10-7	4.4 · 10-7	4.4·10 <sup>-7</sup>
Water vapour resistance (EN ISO 10456)	$\mu = \infty$ (impervious to water vapour)			
Specific national product data				
Flexural modulus of elasticity E [MN/m²]	_	700	1200	1500
BRE Green Guide Rating	A+	A+	A	В
Green Rating by thefuturebuild.com, by Masdar	A	A	A	A
Application area	– Exterior walls – Façades	– Floors – Foundation rafts	– Floors – Foundation rafts	<ul><li>Floors</li><li>Foundation rafts</li><li>Multipurpose roofs</li></ul>

Other dimensions and thicknesses are available on request.
Tolerances according to EN 13167.
For insulation thicknesses > 140 mm, it is recommended to, apply 2 layers on the flat roof.

## **FOAMGLAS®** Boards and Blocks, Special Products

#### **Product data**









EN 13167	FOAMGLAS® READY BOARD T4+	FOAMGLAS® READY BLOCK T4+	FOAMGLAS® PERINSUL	FOAMGLAS® Angle fillet
Dimensions in mm* Length 1200 mm, Width 600 mm**	40 – 180	-	-	-
Dimensions in mm* thickness Length 600 mm, Width 450 mm**	_	40 – 180	50, 115	50 x 50, 60 x 60, 80 x 80, 100 x 100, 130 x 130,
Dimensions in mm* width Length 450 mm**	_	_	115, 175, 240	150 x 150, 250 x 250
<b>Density</b> (± 10%) [kg/m³]	115	115	165	100
$ \hline \textbf{Thermal conductivity $\lambda_D$ [W/(m·K)]} $	≤ 0.041	≤ 0.041	≤ 0.050 W/mK	≤ 0.041 W/mK
Fire behaviour (DIN 4102-1), core material Euro-standard A1	F B2	F B2	F B2	A1
Compressive strength CS external surveillance, (EN 826, Annex A) [kPa]	≥ 600	≥ 600	≥ 1600	≥ 600
Bending strength BS (EN 12089) [kPa]	≥ 450	≥ 450	≥ 550	≥ 450
Tensile strength TR (EN 1607) [kPa]	≥ 100	≥ 100	≥ 150	≥ 100
Thermal expansion coefficient [K-1]	9 · 10-6	9 · 10-6	9 · 10 - 6	9 · 10-6
Specific heat [kJ/(kg·K)]	1.0	1.0	1.0	1.0
Thermal diffusivity at 0 °C (m²/s)	4.2 x 10 <sup>-7</sup>	4.2 x 10 <sup>-7</sup>	3.5 x 10 <sup>-7</sup>	4.2 x 10 <sup>-7</sup>
Water vapour resistance (EN ISO 10456)	$\mu = \infty$ (impervious to water vapour)	$\mu = \infty$ (impervious to water vapour)	$\mu = \infty$ (impervious to water vapour)	$\mu = \infty$ (impervious to water vapour)
Specific national product data				
Flexural modulus of elasticity E [MN/m²]	700	700	_	_
BRE Green Guide Rating	A	A	С	A
Green Rating by thefuturebuild.com, by Masdar	A	A	A	A
Application area	Roofs, concrete  - Metall decks  - Base of the building (perimeter walls)	Roofs Terraces, loggias Base of the building (perimeter walls)	Cold-bridge insulation block     Moisture barrier     Cold-bridge insulation block under parapet wall	– Surpasses the 90° angle for waterproofing membranes)

<sup>\*</sup> Other dimensions and thicknesses are available on request.

<sup>\*\*</sup> Tolerances according to EN 13167.

## Adhesives and Coatings

#### **Product data**









P	_ _	5	e

pasty

## PC<sup>®</sup> 500

#### PC<sup>®</sup> 58

## Type

#### Two-component adhesive, hydraulic binding

High plastic-modified bitumen emulsion

PC<sup>®</sup> 56 WU

Component A:

Single-component adhesive

Two-component adhesive, hydraulic binding

Basis

- Component A: bitumen emulsion Component B: calcium silicates, calcium aluminate, calcium aluminate ferrite
- bitumen emulsion Component B: calcium silicates, calcium aluminate, calcium aluminate ferrite
- Bitumen with a high percentage of fibres and other minerals
- Component A: bitumen emulsion Component B: calcium silicates, calcium aluminate,

calcium aluminate ferrite

Consistency

#### Applicable temperature

- -15°C to +45°C on a
- -15 °C to +35 °C on a

pasty

#### pasty

non-frozen surface

non-frozen surface

-30 °C to +80 °C

-15°C bis +45°C on a non-frozen surface

Processing temperatures

+5°C to +35°C

+5 °C to +35 °C

+5°C to +40°C

+5°C bis +35°C

(air + surface)

at 20 °C: app. 90 minutes

at 20 °C: app. 45 minutes

at 20 °C: several days

at 20 °C: app. 90 minutes

Drying time

Processing time

app. 3 hours

app. 3 hours

several hours

app. 3 hours

Dehydration time

several days several days

Density

app. 1.20 kg/dm<sup>3</sup>

several months

1 to 3 days

Colour

black-brown

app. 0.75 kg/dm<sup>3</sup> app. 1.50 kg/dm3 app. 1.20 kg/dm<sup>3</sup>

Water vapour diffusion

black-brown

 $\mu = app. 25000$ 

black-brown  $\mu = app. 20000$ 

black-brown  $\mu = app. 25000$ 

resistance figure Water solubility

mixable

 $\mu = app. 40000$ 

mixable

none

insoluble

mixable

Solvents Storage

none - Store cool and dry in well-

Protect against frost.

- closed containers Protect against heat and direct exposure to sunrays.
- exposure to sunrays.

Store cool and dry in well-

- closed containers Protect against heat and direct
- few
- Store cool and dry in wellclosed containers.
- Protect against heat and direct
- exposure to sunrays. Keep away from open flames

See the label for expiration date

none

Store cool and dry in well-

closed containers. Protect against heat and direct

exposure to sunrays. Protect against frost.

Storage time

See the label for expiration date

Protect against frost.

See the label for expiration date

and sparks.

Area of application

- Bonded with FOAMGLAS® Slabs/Boards to absorbent and non-absorbent surfaces.
- Reciprocal attachment of FOAMGLAS® Boards.
- Bonded with FOAMGLAS® Slabs to absorbent and non-absorbent surfaces.

tanking concrete.

Surfacer:

app. 1.5 kg/m<sup>2</sup>

Bonded with FOAMGLAS® Slabs/Boards to absorbent See the label for expiration date

Surfacer Container with 28 kg

- In a layer density of 4 mm crack-bridging effect on
- and non-absorbent surfaces.
- Bonded with FOAMGLAS® Slabs/Boards to absorbent and non-absorbent surfaces.

Surfacer.

Form of delivery

(21 kg black component + 7 kg powder component)

- (21 kg emulsion + 7 kg powder component) Full, complete bonding
  - with filled joints: app. 3.5 to 4.5 kg/m<sup>2</sup> - Spot bonding: app.  $2.5 \text{ kg/m}^2$

Container with 28 kg Container with 25 kg

> Full, completely bonded with filled joints: app. 5.0 to 7.0 kg/m<sup>2</sup>

> > app. 2.0 kg/m<sup>2</sup>

- Bonding of waterproofing membrane: app. 2.0 kg/m<sup>2</sup> Top coating:
- Surfacer:

 Full, completely bonded with filled joints: app.  $5.0 \text{ to } 7.0 \text{ kg/m}^2$ app. 2.0 kg/m<sup>2</sup>

Container with 32 kg

(24 kg black component +

8 kg powder component)

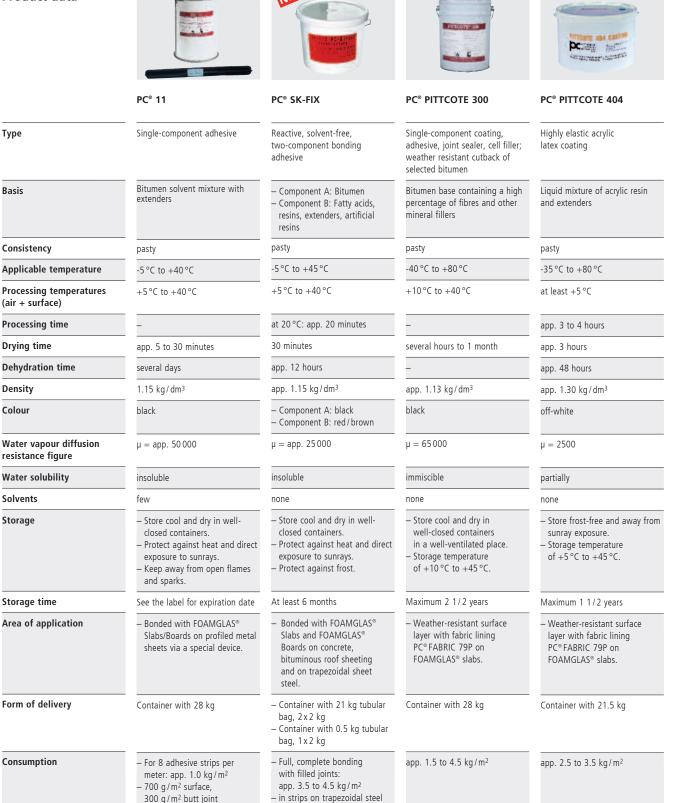
## Consumption

- Full, complete bonding with filled joints: app. 3.5 to 4.5 kg/m<sup>2</sup> - Spot bonding: app. 2.5 kg/m<sup>2</sup>

Surfacer: app. 1.5 kg/m<sup>2</sup>

## **Adhesives and Coatings**

#### **Product data**



FOAMGLAS® Building, Product Profile

decks, 4 strips: app. 1.0 kg/m<sup>2</sup>

## **Rendering and Coatings**

#### Product data

Type

Basis

Consistency

(air + surface) Processing time

Drying time

Density

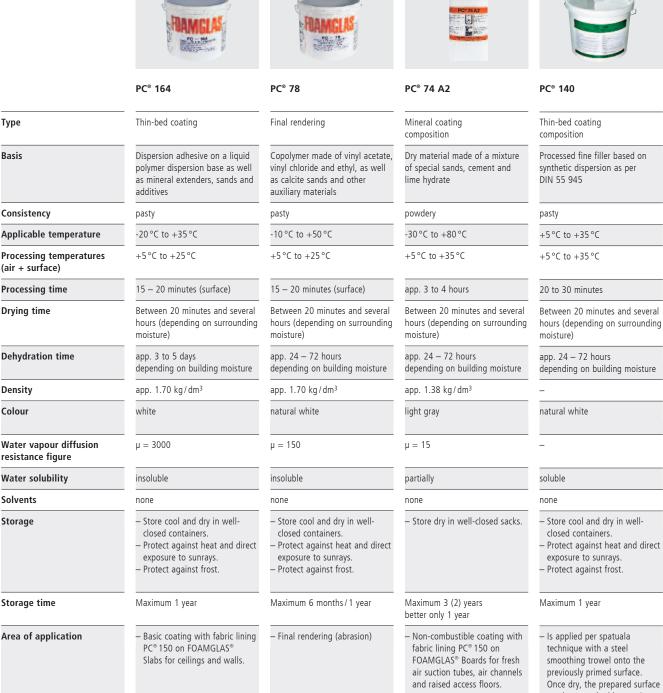
Colour

Solvents

Storage

**Dehydration time** 

resistance figure Water solubility



Storage time Area of application can be smoothed by wetting and rubbing with a spungy Form of delivery Container with 25 kg Container with 25 kg Sacks with 25 kg Container with 25 kg Consumption – As a primer layer: – Grading: app. 3.5 kg/m<sup>2</sup> As coating: app.  $1.5 \ kg/m^2$  per mm 1.0 mm: app. 1.0 to 1.5 kg/m<sup>2</sup>, app. 3.5 kg/m<sup>2</sup> 1.5 mm: app. 1.7 to 2.2 kg/m<sup>2</sup>, of layer density 2.0 mm: app. 2.5 to 3.2 kg/m<sup>2</sup>,  $3.0 \, mm$ : app.  $3.7 \, to \, 4.5 \, kg/m^2$ 

## **Primer and Sealing Compound**

### **Product data**







		PC° EM	PC° 310	PC® PITTSEAL 444
Туре		Thick liquid, solvent-free bitumen emulsion	Solvent-free bonding course, adhesion primer	Single-component sealing compound for sealing of joints, penetrations and connections; plastic and permanently elastic levelling compound; adheres to steel, concrete, wood, etc.
Basis		Bitumen emulsion	Pigmented and quartziferous synthetic resin dispersion	Butyl connection, Naphtha
Consistency		liquid	liquid	pasty
Applicable temperature		-15 °C to +40 °C	+5°C to +35°C	-50°C to +80°C
Processing temperatures	(air + surface)	+5°C	+5°C to +35°C	+10 °C to +25 °C
Processing time			20 to 30 minutes	_
Drying time		App. 3 to 12 hours depending on temperature and humidity	at 20°C and 65% relative humidity, app. 12 hours	Skin formation in 1 to 3 hours
Dehydration time		-	_	No drying
Density		app. 1.04 kg/dm³	app. 1.6 kg/dm³	app. 1.50 kg/dm <sup>3</sup>
Colour		black	white, dull	gray
Water vapour diffusion r	esistance figure	-	-	μ = app. 23 000
Water solubility		mixable	solvent	insoluble
Dry substance at 105 °C		app. 59 weight %		
Solvents		-	none	few
Resistant against:	– Alkali	good		
	– Oil, fats, solvent	poor		
	– Weak acids	good		
Storage		Store dry, frost-free, and protected from sun and heat.	Store dry, frost-free, and protected from sun and heat.	<ul> <li>Store dry, frost-free, and protected from sun and heat.</li> <li>Keep away from open flames and sparks.</li> </ul>
Storage time		Maximum 1 year	Maximum 1 year	Maximum 2 years
Area of application		- Primer coat based on bitumen-emulsion adhesives on absorbent subsurfaces such as concrete, masonry and plaster. Dilute the material 1:3 (partition) with water.	PC® 310 is a solvent-free, pigmented and quartz sand bonding course on synthetic resin dispersion. It is used as a primary coat and bonding course for structural plaster on base plaster PC® 74 A2.	<ul> <li>for sealing of joints, penetrations and connections; plastic and permanently elastic levelling compound; adheres to steel, concrete, wood, etc.</li> </ul>
Form of delivery		Container with 5 kg	Container with 25 kg	– Cartridges with 0.31 kg – Container with 28 kg
Consumption		app. 300g/m² finished mixture	app. 250 g/m²	<ul> <li>For a final layer density</li> <li>of 3 mm: app. 5.2 kg/m²</li> <li>Joint width = 3 mm/</li> <li>Joint depth = 50 mm:</li> <li>app. 0.25 kg/m</li> </ul>

#### **Accessories**



#### PC® 150

#### Types / Description:

Coarse-meshed glass fabric with styrene acrylic

Surface (m<sup>2</sup> per roll): 50 m<sup>2</sup>

Operating temperature: from -35  $^{\circ}$ C to +80  $^{\circ}$ C

**Processing temperatures:** at least 0 °C

**Weight:** 165 g/m<sup>2</sup>

Meshes / dm<sup>2</sup>: 500

Mesh width: 3.6 x 3.4 mm

Mesh density: 0.40 mm

Tensile strength: longitudinal (warp): 42 N/mm

Longitudinal strength: transverse (weft): 38 N/mm



#### PC<sup>®</sup> anchor F

Mechanical anchor made of stainless steel and used to mechanically ensure covered bonded FOAMGLAS® to ceilings and walls (ceiling height over 2.50 meters and for ceramic boards).

#### Base height:

20 mm/30 mm/60 mm

Consumption on walls:

2 Parts / m<sup>2</sup>

Consumption on ceilings:

4 Parts/m<sup>2</sup>

Packaging unit: Cartons with 100 pieces

Storage: Store dry and protected

from moisture.

#### PC<sup>o</sup> SP 150 / 150 Serrated Plates, galvanized

#### Used to attach:

- Metal roof covering (without holes)
- Facades subconstructions (with punched holes, ø 10.2 mm)

#### Size:

150 x 150 mm

Sheet density:

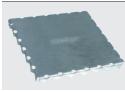
1.5 mm

Consumption: Depending on

type of application

Packaging unit: Cartons with 50 pieces

Storage: Store dry and free



#### PC<sup>®</sup> SP 200 / 200 Serrated Plates, galvanized

Used to attach metal roof covering

Size:

200 x 200 mm

Sheet density:

1.5 mm

**Consumption:** Depending on type of application

Packaging unit:

Cartons with 25 pieces

**Storage:** Store dry and free of

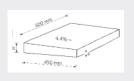


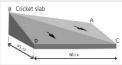
#### Mixing bar

## Area of application:

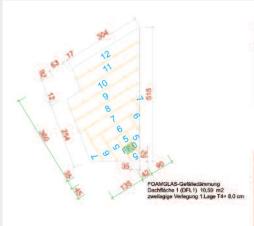
Insert into an electric drilling machine (at least 800 r.p.m.) for mixing of single or two-component products.

## **FOAMGLAS® Tapered Roof Service**











#### Pittsburgh Corning FOAMGLAS® Tapered Roof Design

FOAMGLAS® Tapered Roof is a made to measure insulation system with cut-to-falls slabs which allows for efficient rainwater drainage. It saves weight on the roof, because there is no need for a concrete screed-to-falls.

Standard falls are 1 in 80 (1.1%), 1 in 60 (1.7%), 1 in 40 (2.2%). Other dimensions, thicknesses and falls are available on request, as for instance the so-called 'cricket' slabs with a bi-directional fall

Pittsburgh Corning assists architects and engineers by her own CAD-Department and provides Tapered Roof Design, based on the architect's site measurements.

The service comprises estimation, calculation, installation plans, building site logistics and site assistance

## www.foamglas.com

# FOAMGLAS Building

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