

Technical data sheet

Material

Spray-up glass fibre reinforced concrete, Grade 18P according to GRCA. Manufactured from a Portland cement (EN 197-1), silica sand with maximum grain size 1-2 mm, acrylic polymers, superplasticizers, alkali resistant fibres and, where applicable, inorganic colouring pigments.

Purpose

These prefabricates are intended for:

- internal and external wall claddings
- balconies or non-structural fillings of balcony balustrades

Colour

Prefabricates can exhibit the natural colour of hardened concrete (architectural concrete). At the Client's request, the prefabricates may be coloured throughout its mass or only on the surface. Discoloration can appear on the surface of the prefabricates from nature of hardened concrete with or without added colour.

Weather can also influence discolouration due to moisture migration through panel.

Discolouration can appear as streaks from different drying rates caused by the metal frame panel [1].

Surface texture

According to customer request, the surface can be:

- Natural, with concrete pores (architectural concrete)
- Smooth
- Rough

Repairs

Repairs can be made at the surface and corners of the product. The colour of the product where it has been repaired may vary, but this discrepancy should not be visible at a distance of more than 6 metres. [1].

Surface Cracking

A certain amount of very fine, shallow cracks may appear on the surface of the GRC. This hairline cracks is normally referred to as "surface crazing" and should not be confused with cracks which penetrate the GRC. The A hairline crack is a surface crazing of minute width, visible to the naked eye from a short distance but not measurable with ordinary means.

Surface crazing is purely cosmetic and does not interfere with the structural integrity of the GRC. It should not be a cause for rejection [1].

Air voids

Product may have visible air voids. Air voids are accentuated when the surface is smooth, acid etched or lightly sandblasted. If the air holes are of a reasonable size (3 to 6 mm), repairs may not be carried out [1].

Edges

All edges of GRC units will be detailed with a reasonable radius or chamfer. Sharp corners chip easily handling and during service of the building. The size of quirk or radius should never be less than 1.5 times the maximum aggregate size used in the face mix [1].

Quality

Quality control in SKONTO Concrete Cladding is carried out in accordance with GRCA guidelines [2-3].

Geometry

Linings are produced in any shape, size and thickness (flat and openwork flat plates, 3D spatial elements) in accordance with the customer's design, taking into account technical restrictions. The company SKONTO Concrete Cladding currently does not produce typical products. Tolerances of dimensions in accordance with [1].

Prefabricate dimensions, acceptable deviations:

Under 3m	± 3mm
3m and over	±5 mm

Thickness:

Product thickness +3mm; - 0

Bowing:

Bowing shall not exceed L/240

Fixing points

Fixing points in all dimensions ± 3mm

Other tolerances can be requested, or viewed [1]

Reaction to fire

Fire resistance approved of class A1 for glass fibre reinforced concrete with concealed stainless-steel fixings and metal frame according to the European Standard EN13501-1:2007+A1:2010

Impact test

Impact test is approved of class 1 and Negligible risk according to CWCT TN75 and TN76 with soft and hard body impact

Properties [3-4]

Dry Bulk Density (kg/m ³)	1900-2300
Water Absorption (%)	8 - 12
Apparent Porosity (%)	17-23
LOP (N/mm ²)	>6
MOR (N/mm ²)	>18
Tensile Strength; UTS (N/mm ²)	8 - 12
Shear strength; Punching Shear (N/mm ²)	25 - 35
Shear strength; In Plane Shear (N/mm ²)	7 - 12
Shear strength; Interlaminar Shear (N/mm ²)	2 - 4
Shrinkage	up to 0.03%
Total ultimate shrinkage	<0.2%
Thermal Insulation (W/m ² C)	0.5 to 1
Thermal expansion (10 ⁻⁶ /°C)	10-20
Elastic Modulus (GPa)	10-20
Poisson coefficient	0,20-0,25

Transport

Pallets with panels must be secured in accordance with safety requirements on a transport vehicle. Any protection used must not damage the edges of the panels. Strapping should be secured to the edges of the pallets. When loading / unloading, use a forklift with a suitable lifting capacity. It is forbidden to stack pallets or put anything on pallets with elements.

Storage on the construction site

Pallets with panels should be placed on an even surface so that the pallet is evenly distributed in 4 support points, in a dry place and not exposed to mechanical damage. It is forbidden to stack pallets with elements. In case of storage outside, the area should be secured against weather conditions.

Logistics of elements

Elements from pallets should be lifted so that they do not rub against each other. The plates should be moved in a horizontal position with clean work gloves. Spread the weight evenly when carrying the panels. Elements must not be supported by a wall or leaned one against another. Panels that are contaminated during transportation should be cleaned using only by means and techniques approved by the manufacturer. Do not put elements on top of one another without protective pads between them to avoid scratching the element face. Do not lift or transport elements by holding them directly at the corner. During assembly, protect the scaffolding, (cover with polystyrene, geotextile) to avoid damage of the elements during the transport of facade elements.

The manufacturer is not liable for any damage to the elements resulting from failure to comply with the above points or any other damage caused by the client to the elements.

References.

1. Manual Quality Control for Plants and Production of Glass Fibre Reinforced Concrete Products. 2 ed. Precast/Prestressed Concrete Institute, 2009.
2. Methods of Testing Glassfibre Reinforced Concrete (GRC) Material. The International Glassfibre Reinforced Concrete Association (GRCA), 2016.
3. Practical Design Guide for Glass Reinforced Concrete. Version 1.0. The International Glassfibre Reinforced Concrete Association (GRCA).
4. Glass Fiber Reinforced Concrete principles, production, properties and applications. P.J.M Bartos, Whittles Publishing, UK, 2017.

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