Architectural Cladding: Technical Data Sheet

BCM GRC products are manufactured to the International Glassfibre Reinforced Concrete Association (GRCA) specification for manufacture, curing and testing of GRC products.

As per the GRCA specification, BCM GRC Ltd manufacture products to the highest grade of GRC (Grade 18) unless agreed otherwise with the client or specifier.

The Material

Glassfibre Reinforced Concrete (GRC) is manufactured from a range of raw materials based around Portland cement, silica sand, acrylic polymers and alkali resistant fibres. Pigments are also added where applicable to blend the colour of GRC with the facing coat. All of our raw materials meet the appropriate standards, with certificates of conformity available on request.

Texture and Appearance

The face coat gives the material its appearance and is a combination of the materials above and decorative aggregates to give the required finish.

It should be noted that GRC is a cementitious product made up of naturally occurring materials and as such will have a degree of colour and surface texture variation and samples will not be an exact colour and texture match, BCM GRC Ltd would always recommend samples are not viewed individually.

The ambient conditions in which GRC units are installed will also affect the appearance of our products particularly on larger projects where production may be over many weeks, although the appearance should blend over a period of time.

Our GRC products can provide a range of finishes from smooth through to textured, the size and mixture of aggregates that are included in the face coat along with an abrasive grit blast will produce the final texture; with final texture being dependant on the use of aggregates, abrasive grit blasting and colouring. Some variation within a textured finish is unavoidable and BCM GRC Ltd would always recommend samples are not viewed individually.

Detailing and Viewing of the Finished Product

To create the final texture and appearance of the product each unit is grit blasted to expose the aggregates and remove surface laitance; this process can dislodge any larger particles within the face or on the edge of the panels. This can be visible close up but should not be visible when viewed from a distance of 6 metres.

Efflorescence

Efflorescence is a natural occurring phenomenon caused by the migration of salts to the surface of the concrete during the curing process, BCM GRC Ltd mitigates this as much as possible by dry curing its products and storing all architectural items under cover for a minimum of 14 days. It also applies hydrophobic sealers to the face where appropriate to further mitigate any issues.

Any efflorescene will fade over time and should not be considered as a defect.

Repairs

All BCM GRC Ltd architectural products are hand finished with small repairs to the surface caused by the grit blast process, these will typically be for surface defects of less than 5mm diameter and are for cosmetic purposes. These should not be visible when viewed from a distance of 6 metres. The repairing of panels due to handling damage on site can also be carried out by specialist repair companies, however BCM GRC Ltd should be consulted if these are more than cosmetic.

Quality Assurance

BCM GRC Ltd are members of the GRCA AMS scheme and have a full quality assurance system in place which enables us to continually check and monitor the quality of our manufacturing processes and final products giving traceability for ourselves and the client from start to completion of a project.

Copies of our quality manual are available to customers and clients on request.

Design

The correct design of GRC products and the fixing of these is an important part of the long term quality and appearance of GRC; BCM GRC Ltd are committed to ensuring the highest quality products are manufactured and installed and as such use third party engineers to design or verify the design of our GRC panels and any fixings. To ensure this it is important that BCM GRC Ltd are engaged by the client as early as practical in the design and construction of a project.

Properties and Technical Information

Dimensional Tolerances

Architectural products are manufactured in accordance with BS 8297 Table 11

Characteristic Mechanical Properties of Grade 18P GRC (at 28 days)

- MOR: 18-30 N/mm2
- LOP: 5-10 N/mm2
- UTS: 8-12 N/mm2
- BOP: 4-6 N/mm2
- Interlaminar Shear: 2-4 N/mm2
- In-Plane Shear: 7-12 N/mm2
- Punching Shear: 25-25 N/mm2
- Dry Bulk Density: 1800-2100 Kg/m3
- Water Absorption: 8-13%
- Apparent Porosity: 16-25%

Fire Resistance

Euroclass A2

Fixings and Lifting Sockets

All fixings within the GRC products are manufactured from Stainless Steel in accordance with best practice principles

Identification of Units

All BCM GRC Ltd architectural units are identified with a job reference, product code, and quality mark. Where possible this will be physically marked within the unit.

Batch numbers of material will also be recorded on the panel.

Handling, Weight and Installation of Products

Bespoke panel design weights will be identified to the customer during the design process.

Care should be taken when handling GRC products and BCM GRC Ltd will work with the client to ensure that safe lifting can be incorporated in to the design of bespoke panels.

BCM GRC Ltd recommends the use of a “double glove” handling procedure for installation to avoid the transference of swarf or greases from bracketry to the face of the finished product.

Glossary of Terms

GRC – Glassfibre Reinforced Concrete

GRCA- International Glassfibre Reinforced Concrete Association

AMS – Approved Manufacturers Scheme – The GRC industry independently audited quality scheme.

MOR – Modulus of Rupture (flexural strength), the ultimate bending stress obtained from the 'four point bend test'.

LOP – Limit of proportionality, the point beyond which 'Hooke's Law' is no longer true when stretching a material.

UTS – Ultimate Tensile Strength, the stress at which GRC fails under pure tension.

BOP – Bend over point, the stress at which the stress/strain curve deviates from a straight line variation when a sample of GRC is tested in direct tension.

Notes

Note 1: This Data Sheet should be read alongside the BCM GRC Ltd material COSH Sheets

Note 2: BCM GRC Ltd reserve the right to alter or amend the information within this document and clients or specifiers should contact BCM GRC Ltd with any questions relating to this.

References:

Specification for the Manufacturing, Curing and Testing of GRC Products, 4th Edition, January 2016

GRCA AMS Scheme Regulations: Regulations, Membership Procedures and Assessment, July 2014

GRCA website: http://www.grca.org.uk/

For more information please contact BCM GRC Ltd on 01948 665321 or visit our website: www.bcmgrc.com