**ZERODEC (Glass Reinforced Gypsum)**

**SPECIFICATION**

**GRG - Glass Reinforced Gypsum**

**Introduction**

'**ZERODEC**' is the trade name given to a type of glass reinforced gypsum exclusively produced by GILLESPIE (UK) LIMITED, Abbey House, Arena Business Centre, 282 Farnborough Road, Surrey, GN14 7NA, England, (telephone 01276 405000). Its method of production is protected by patent.

**Specification**

The (item) is to be made of hand-laminated (not cast) glass reinforced gypsum, combined with continuous strand monofilament glass fibre, thoroughly wetted out and trimmed all edges at green stage, the feed water having been polymer-modified and treated with super-plasticizer. Units shall be cured for 12 hours at a constant thermostatically controlled temperature of 30°C, and should have a finished weight not exceeding 7 kg/m$^2$ and a nominal thickness of 5 mm.

## 1. PHYSICAL CHARACTERISTICS

### 1.1 Water Penetration

The material shall be suitable for all internal application and shall not absorb moisture which may be present through excessive humidity.
The material should not be used externally in locations where it is likely to be rained on but may be used externally if it is under the cover of a canopy and painted with exterior grade paint.

### 1.2 Fire

**Reaction to Fire** - Classified to Euroclass A1 in accordance with BS EN 13501

1.3 **Chemical Resistance**

The material will not be required to be exposed to liquid chemicals or deliquescent crystals.

1.4 **Thermal Insulation**

The material shall have a thermal conductivity (K) value of not greater than 0.679 W/m deg. C.

1.5 **Density**

The material shall have an average density of 1660 kg/$m^3$.

1.6 **Expansion**

The material shall have a thermal coefficient of expansion not exceeding 14.94 x $10^{-6}$/deg. C.

1.7 **Structural Characteristics**

| | |
|---|---|
| The material shall have an ultimate tensile strength of not less than | 17.2 MPa |
| Max Flexural Strength (ASTM D790 in 2020) | 18.15 MPa (mean result) |
| Max Flexural Load (ASTM D790 in 2020) | 48.45 N (mean result) |

Impact Strength measured by IZOD method (2019) 43 KJ/$m^2$ (mean result)

Barcol Hardness to ASTM D2853 (min 33) (2019) 54 (mean result)

| | | |
|---|---|---|
| Pull Out Force of T section | 38 x 32 mm T Bar | 367 kg/50cm |
| | T section laminated over at ends | 552 kg/50cm |

1.8 **Anti-Static**

The material shall hold negligible static charges in order to minimise dust attraction.

1.9 **Ultraviolet**

The material shall not be affected by ultra-violet light.

1.10 **Asbestos and VOC**

The material shall contain no asbestos and awarded GOLD in VOC tests.

1.11 **Fungoid Attack**

The material shall not sustain fungoid growth under normal conditions.

## 2. MATERIAL

2.1 **Plaster**

High quality hard alpha-hemihydrate casting plaster with a low expansion coefficient. Minimum 90% by weight.

2.2 **Glass Fibre**

Glass fibre tissue to be used as a first layer to produce a smooth finish and continuous strand mat laid down in multiple layers to provide thickness/strength of laminate. Minimum 5% by weight.

2.3 **Polymer**

Patent polymers to achieve improved tensile strength and reduce the permeability of the plaster.

2.4 **Water**

Clean water fit for drinking and used in such proportion as to ensure maximum workability and optimum water/plaster ratio.

2.5 **Mould Release Agents**

Proprietary mould release agents/waxes applied to the moulds between each production. The agents/waxes shall not have any adverse effect upon the surface of the component.

## 3. WORKMANSHIP

3.1 **Design Mix**

All components shall be manufactured to a consistent mix, with all constituent materials accurately gauged, batched or weighed.

3.2 **Curing**

All components shall be cured for 12 hours in a dehumidifying oven at a constant thermostatically controlled temperature of 30$^{O}$C and moisture extraction rate to maintain a relative humidity of 30%.

3.3 **Quality Control**

All components shall be individually inspected, and any surface blemishes rectified accordingly. All stages are recorded and signed off by an appointed person and recorded for future reference.

3.4 **Painting**

**Zerodec** GRG is normally painted. Panels with filled joints or joined to plasterboard should be sealed with Gyproc Drywall Sealer and then painted with a mist coat and two full coats of vinyl matt emulsion.

## 4. PERFORMANCE

Each component shall, within the following limits, be true in shape and free from cup and bow.

4.1 **Squareness**

The component, where rectangular, shall be tested for squareness by measuring the diagonals. The difference between the two measurements shall not exceed 0.5% of the length of the diagonal.

4.2 **Flatness**

The deviation from the horizontal plane shall not exceed ± 2mm in 1 metre length.

4.3 **Dimensional Tolerance**

The dimensional accuracy of any component shall be within ± 2mm per metre length.