
GFRG — Glass Fiber Reinforced Gypsum

Technical Specification & Product Datasheet

Overview

SALBEN Group offers a manufacturing service for decorative panels of any complexity. In addition to producing Glass Fiber Reinforced Concrete (GFRC) elements, one of our core areas of expertise is a dedicated GFRG production line — a technology with no equivalent currently available in Kazakhstan or the CIS. Production is based on advanced international technology, enabling the manufacture of unique decorative GFRG elements.

The GFRG concept is built on the use of advanced materials — alpha-gypsum reinforced with special synthetic or natural fibers — which give GFRG products distinctive performance properties.

Advantages of GFRG Decorative Elements

- Large-format elements with a single, seamless composition
- Lightweight — low mass even for large-format products (finished element thickness: 5–10 mm)
- Simple installation — unlike traditional gypsum products, GFRG elements simplify the mounting process and do not require reinforced substructures
- Excellent fire resistance (non-combustible material)
- Environmentally friendly (non-toxic)
- Strength and impact resistance (damaged sections can be replaced locally)
- Flexibility and plasticity, simplifying installation

GRG products are distinguished by increased density, achieved through the use of specialized materials distributed throughout the full volume of the material, providing three-dimensional reinforcement. The combination of plasticity with flexural and tensile strength results in higher impact toughness and resistance to cracking and mechanical damage, owing to reinforcing fiber distributed in all directions. This makes decorative GFRG elements indispensable for interior spaces with large internal volumes.

Properties of GRG / GFRG

Reinforced Glass Gypsum / Glass Fiber Reinforced Gypsum

Technical Description

GRG/GFRG is based on multi-layer continuous-strand glass fiber mats forming a matrix, filled with a high-density gypsum-cement compound. The material contains no polymers or resins. Shell thickness depends on the number of layers and the type of glass fiber used; thicker elements are produced using multiple matrix layers.

Substructure base: embedded plywood and/or metal fixing points, or embedded suspension flanges for mounting. Foam and/or timber “ribs” are embedded within elements of complex configuration or flat molded components to provide additional rigidity and reinforcement.

Surface Finish

- **Option A** — GRG/GFRG is supplied as unpainted decorative elements with a smooth white surface, ready for application on site.
- **Option B** — Finished with a factory-applied decorative coating of choice, matched to a sample approved by the client. Further information on both finishing options is available in Technical Datasheet “GRG/GFRG Installation 1”.

Physical Characteristics

Property	Value
Shell thickness	Floating thickness (process characteristic), nominally 6 mm (± 3 mm); edges may thicken up to 20 mm depending on design
Geometry	Face-surface geometry conforms to specified dimensions and curvature
Glass fiber content	Not less than 6% by mass (volumetric measurements not applicable)
Weight	7–10 kg/m ² (depending on product geometry and tooling type)
Flexural — modulus of rupture	22–24 MPa
Flexural — modulus of elasticity	8,963–13,100 MPa
Tensile — ultimate tensile strength	12–14 MPa
Tensile — modulus of elasticity	18,620–26,200 MPa
Compressive strength	49.64–57.23 MPa
Thermal conductivity	22.7–23.8 W/m ² ·°C
Coefficient of thermal expansion	14×10^{-6} mm/mm/°C
Fire resistance	Non-combustible (NG-rated), fuel contribution = 0, smoke = 0
Toxicity	Non-toxic
Density	1,680–1,826 kg/m ³
Hardness	95 HRC minimum (Rockwell scale)

Manufacturing & Installation Tolerances

Manufacturing Tolerances

- Dimensions — all directions ± 3 mm
- Warping / deflection ± 5 mm per 1 m
- Squareness / bevel / diagonal ± 12 mm per 1 m
- Out-of-roundness ± 5 mm per 1 m of diameter

Installation Tolerances

- Moisture-induced deflection: max. 3 mm (industry standard)

This datasheet is provided for architectural and engineering reference. For project-specific technical consultation or custom GFRG applications, please contact SALBEN Group's engineering team.