

GFRC TECHNICAL DATA SHEET

TYPICAL FORMULATION OF GRC

Components	Spray	Premix
Cement	50 kg	50 kg
Fine aggregate	50 kg	50 kg
Glass fibre	4.5-5%	2-3.5%
Plasticizer	0.5 kg	0.5 kg
Polymer 5 kg	5 kg	5 kg
Water	13.5 litre	14.5 litre

TYPICAL STRENGTH PROPERTIES OF GFRC

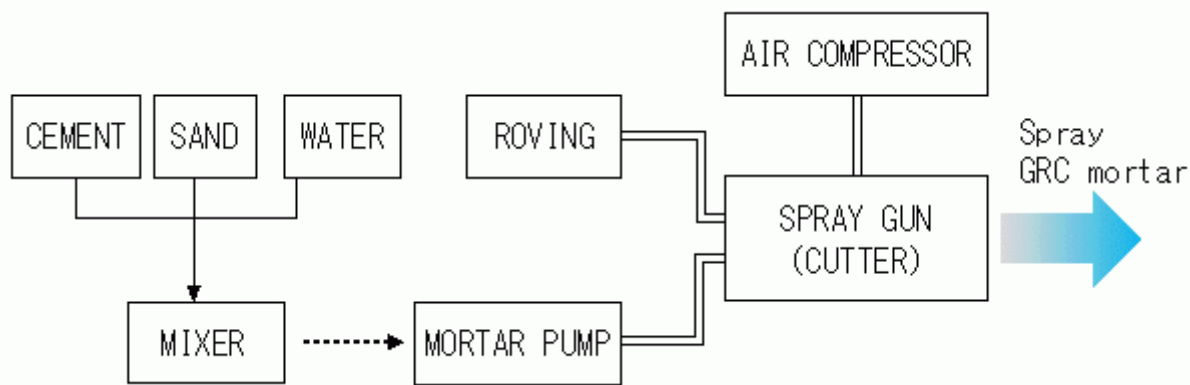
Components	Spray	Premix
Ultimate strength (MOR) MPa	20-30	10-14
Elastic limit (LO R) MPa	7-11	5-8
Interlaminar strength MPa	3-5	NA
In-planar strength MPa	8-11	4-7
Compressive strength MPa	50-80	40-60
Impact strength Kj/m ²	10-25	10-15
Elastic modulus GPa	10-20	10-10
Strain to failure %	0.6-1.2	0.1-0.2
Dry density t/m ³	1.9-2.1	1.8-2.0

SPRAYED GRC



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- The water and admixture (and polymer if used) are placed in a “high shear mixer” and the sand/cement are slowly added until a smooth creamy slurry is achieved. The consistency of the slurry can be checked using a simple slump test kit. Mixing time is about 1 – 2 minutes.
- When ready the mix is transferred to a “pump/spray unit”. The pump conveys the slurry at a regulated rate of flow to the spray gun. At the spray gun fiber, in the form of a roving, is chopped to a length of approximately 32mm and added to the slurry. The two materials are projected onto the mould surface using an air supply from a compressor.
- The GRC material is sprayed and built up in thin layers until the required thickness is achieved – normally 10 – 15mm. Simple hand rollers are used to compact the material between layers.
- The product is left in the mould and covered with polythene to prevent moisture loss until the next day. The product is then demoulded.
- After demoulding the units are covered with polythene and allowed to cure for approximately 7 days. Alternatively, if a polymer curing compound is used in the mix the units can be exposed to the atmosphere immediately although it is advisable to keep them protected from direct sunlight or severe external conditions for a day or two. Reference should be made to the Polymer Supplier’s instructions.

PREMIX GRC

- The sand and cement are mixed dry and then the water/admixture and polymer (if used) are added. Generally, a two-speed slurry/fiber blender mixer is used. With this type of mixer, the fast speed is designed to create a smooth creamy slurry. This takes about 1 – 2 minutes. The mixer is then switched to slow speed and fibre in the form of chopped strand (length approximately 13mm) is added slowly. The fibre is blended into the mix for approximately 1 minute.
- Once the mix is ready, it is poured into moulds which are vibrated using a vibrating table.
- The product is left in the mould and covered with polythene to prevent moisture loss until the next day. The product is then demoulded.
- After demoulding the products are cured under polythene sheets to maintain moist conditions for approximately 7days. Alternatively, a polymer curing compound can be used as described for the sprayed process.
- For more information about manufacturing GRC please see our Specification of GRC

THE SPECIFICATION OF GRC



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- Unlike traditional concrete, which is classified by its compressive strength, GRC is classified by its flexural strength or Modulus of Rupture (MOR). GRC is categorized into three grades, Grade 8, Grade 10, and Grade 18, with each grade identified by its corresponding MOR value. Over the last 50 years, GRC best practice standards have been developed and applied across Europe, America, Asia and Australasia that set the benchmark for producing high quality GRC.



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