



Cement Composites Technology Ltd

► *Expert Assistance with GRC* ◀

METHOD TECHNOLOGY FOR THE PRODUCTION OF HAND- PACKED, PREMIX GRC COMPONENTS

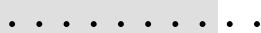
Equipment

- Pan & paddle type mixer [for backing mix] e.g. Tubmix 50 or RM 65
- High speed drill with whisk [for facing mix and small quantities of GRC]
- 10L buckets plus smaller containers
- Hopper gun
- Suitable moulds
- Weighing scales [0-25kg±0.5kg and 0-3kg ±gm]
- Finishing tools

Raw Materials

- Portland cement [White or Grey]
- Dried bag sand
- Prop-Cure polymer
- Water
- Cem-FIL 12mm chopped strands
- Pigment
- Glenium 315 superplastiser

- Plus
- Demoulding agent
- [Retarder/(Accelerator) for hot/(cold weather) only]
- Acid gel [if exposed surface finished desired]



<u>Typical mix*</u>	<u>Facing [gm]</u>	<u>Backing [Kg]</u>
Portland cement [White or Grey]	1000	10
Dried bag sand	1000	10
Polymer [add more for countertops]	100	1
Water	270	2.7
Cem-FIL 12mm chopped strands	0	0.6
Pigment	10	0.1
Glenium 315 superplastiser	1	0

[* A typical 12mm thick layer of premix GRC will weigh 25-30Kg/sq. m.]

Mixing sequence

For facing mix [2/3mm thick]:

Place the polymer into a 10L bucket, add the pigment and stir vigourously using the high speed drill and whisk until a uniform, lump free mix is achieved. Add the water and sand and mix gentle whilst adding the cement. Stir until lump free taking care to scrap the sides in between. Add the Glenium to obtain a homogeneous, fluid mix.

For 12mm backing mix [after facing mix is sprayed and semi-dry. See below]

Follow the above sequence using the ingredients above and the pan and paddle mixer. It may be necessary to mix for a longer time because of the lack of shear action by the mixers being used. Once a homogenous mix is obtained, add the fibre and stir for a minimum of time until no dry, white fibre is visible. DO NOT overmix after the fibre is added as this could damage the fibre. The mix should be self supporting but should easily squeezed through the hand

Production Sequence

Make sure that all the mould are clean, dust free and treated with a suitable demoulding agent [and allowed to dry if this is called for by the manufacturers]

Place the facing mix into the hopper gun and adjust the air pressure until a uniform mist is obtained. Use the minimum pressure possible to reduce rebound of the sand, spray a 2->3mm facing mix into the mould. Spray so as to sweep the dry [rebound] sand down to one end of the mould. This needs to be removed [compressed air is the best way] just before spraying the face mix into this last section of the mould. Leave to set until firm to the touch but NOT dried out. This will take 20->60 min depending on ambient temperature and air circulation. In cold weather, gentle radiant heat can be applied but care must be taken not to dry it out. [Hot air type heaters are NOT suitable].

Once the facing mix is firm, make the backing mix and apply it over the facing mix taking care not to disturb it. Pin gauges can be used to measure the thickness as long as the resulting hole is firmly removed afterwards.

Edge details are best formed by adding a return so as to give a uniform thickness and smooth edge. However, they can be formed with trowels.

Curing and Demoulding

Cover the mould overnight with polythene sheets so as to retain the moisture necessary for the hydration and setting of the cement. Temperature should be more than 10°C otherwise the cement will not fully set. Covering with additional sheets of an insulating material will also help in cold conditions. The next morning, check that the GRC is hard [it should not feel 'green or spongy'] and that it is strong enough to take out of the mould. If it is not, leave it for several more hours or the next day. Demoulding too soon will result in broken products. The product should release from the mould with the minimum of physical effort. If it sticks, it should be eased out and compressed air between the product and the mould is often effective. It should not be levered out or excessively hit.

Once demoulded, the mould should be cleaned and stored ready for use again

Storage

Ideally the products should be stored for 7 days out of direct sunlight or strong winds and not in temperatures below 5-10°C so as to be strong enough for transport and erection without creating micro-cracks or even major cracks. It should be stacked so as to be uniformly supported since it can distort at this early age. 1 day old GRC can creep so avoid overhanging sections or non-vertical stacking.