



Gantrail PBG is a free flow polyester grout, specifically designed and developed for anchoring bolts and dowels into vertically downward holes into rock, concrete, brickwork and masonry. Typical applications are the permanent fixing of starter bars and dowels, foundation bolts, ground anchors, base plates for building systems and rail and crane tracks.

DESCRIPTION

Gantrail PBG is a two pack system consisting of a liquid polyester resin and a filler component containing graded silica sands and an activator. Available in Standard Grade or Tropical Grade versions.

DIRECTIONS FOR USE

1. Drilling the hole

Using the correct diameter drill bit (see table), drill the hole to the required depth. A rotary percussive machine should be used. If for any reason diamond drilling is required the smooth hole produced must be thoroughly roughened

2. Cleaning the hole

Drilling debris and dust must be thoroughly cleaned from the hole using a stiff nylon bottle brush and clean compressed air and/or clean water. If water is used the hole may be left damp or even full of water, but the water and the sides of the hole must be clean.

3. Mixing

Pour the resin component into a suitable clean mixing vessel, and whilst stirring slowly add the activated filler component. Once the filler component is completely added, mix for a further 1 minute. A mechanical mixer such as a slow speed drill and EP1 MR2 mixer paddle is recommended.

4. Application

Pour the mixed Gantrail PBG into the drilled hole taking care not to entrap air or water. If the hole is of a particularly small diameter or if the displacement of water is difficult by pouring, the Gantrail PBG can be injected by using Exchem applicator cartridges and injection tubing. The tube should be placed to the bottom of the hole and the resin injected through it, the tube being slowly withdrawn as the hole fills with resin.

The hole should be filled to approximately 1/2 of its depth, depending upon application, and the fixing should be immediately pushed slowly down into the resin, with a twisting action, displacing the resin up towards the top of the hole to completely fill the annular space. The

bolt must then be left undisturbed until the resin has set. The fixture can be attached once the service time of the resin has elapsed.

5. Cleaning

Tools should be cleaned immediately after use, before the resin sets, using proprietary cleaner. Once the resin has set it can only be removed by mechanical means.

TECHNICAL DATA

Hole sizes

Rebar anchor

Nominal bolt dia (mm)	8	10	12	16	20	25	32	40
Required hole dia (mm)	10	12	14	20	25	32	38	48

Allthread stud

Stud dia (mm)	8	10	12	16	20	24	30
Required hole dia (mm)	10	12	14	18	24	28	35

N.B. Hole diameters stated are nominal diameters when holes are drilled with the appropriate diameter drill bit to BS 5621

Physical Properties Standard Grade

Setting times

Temperature (°C)	Pot Life (mins)	Initial Set (mins)	Service Time (hours)
-5	90	120	16
10	50	75	4
20	20	40	2
30	10	20	1

Typical ultimate physical properties

(Testing to BS 6319 cured for 7 days @ 20°C)

Compressive strength	105 MPa
Tensile strength	13 MPa
Flexural strength	34 MPa
Compressive modulus	13 GPa
Density	2.0 +/- 0.1



GANTRAIL®

PBG

Physical Properties Tropical Grade

Setting times

Temperature (°C)	Pot Life (mins)	Initial Set (mins)	Service Time (hours)
30	30	50	3
35	20	40	2
40	15	25	1½

Typical ultimate physical properties

(Testing to BS 6319 cured for 7 days @ 35°C)

Compressive strength	90 MPa
Tensile strength	12 MPa
Flexural strength	28 MPa
Compressive modulus	15 GPa
Density	2.0 +/- 0.1

Load capacity data for all thread studs

Stud Diameter <i>d</i> (mm)	Hole Depth <i>h₀</i> (mm)	Characteristic Load in 30 MPa concrete <i>N_{RK}</i> (kN)	Recommended Load in 30 MPa concrete <i>N_{REC}</i> (kN)
8	80	12.5	4.2
10	90	23.1	7.7
12	110	23.9	8
16	125	36.9	12.3
20	170	53.5	17.8
24	210	66.0	22.0

Load capacity for reinforcing bar anchors

Equation for tensile load capacity (assumes $f_{cm} \geq 20$ MPa)

$$\text{Tension } N_{RK} = (h_{ef} - 50) / 2.5$$

Concrete capacity reduction factors

Close edge tension:

$$Rf_{CN} = 0.4 + (0.4C / h_{ef}) \quad 0.5 \leq (C / h_{ef}) \leq 1.5$$

Close edge shear:

$$Rf_{CV} = 0.25 + (0.5 C / h_{ef}) \quad 0.5 \leq (C / h_{ef}) \leq 1.5$$

Close spacing tension or shear:

$$Rf_S = 0.4 + (0.6 S / h_{ef}) \quad 0.25 \leq (S / h_{ef}) \leq 1$$

- h_{ef}* effective bond length (rebar) (mm)
- C* close edge distance (mm)
- S* anchor spacing (mm)
- N_{RK}* anchor characteristic load tension (kN)
- N_{REC}* anchor recommended load (kN)
- Rf_{CN}* close edge reduction factor, tension only
- Rf_{CV}* close edge reduction factor, shear only
- Rf_S* close spacing reduction factor, tension and shear

STORAGE

Store in a cool, dry, frost-free conditions away from direct sunlight, under such conditions the shelf life will be 12 months.

PACKAGING

Gantrail PBG is available as a 2.75 litre unit, supplied either in separate components, unlabelled and without outer packaging or separate components fully labelled and packed into a labelled outer plastic container.

It is also available as a 220kg drum of resin component and 880kg bulk bag of activated filler.

HEALTH AND SAFETY

Gantrail PBG contains styrene which is currently classified as a hazardous material and it is flammable with a flash point of 32°C. Wear suitable protective clothing, eye/face protection and gloves, and ensure adequate ventilation.

For further health and safety information, please refer to the relevant Safety Data Sheet.

IMPORTANT NOTE

Whilst all reasonable care is taken in compiling technical data on the Company's products, all recommendations or suggestions regarding the use of such products are made without guarantee, since the conditions of use are beyond the control of the Company. It is the customer's responsibility to satisfy himself that each product is fit for the purpose for which he intends to use it, that the actual conditions of use are suitable and that in the light of our continual research and development programme the information relating to each product has not been superseded.

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