



Conbextra® BPG

High strength, pourable, non-shrink, cementitious bolt pocket grout

Uses

Conbextra BPG grout is used for general purpose grouting of bolt pockets of equipments where it is essential for the bolt to withstand static and dynamic loads. Typical applications would be the grouting of bolt pockets of turbines, compressors, boiler pumps etc. It can also be used for anchoring a wide range of fixings. These include masts, anchor bolts and fence posts.

Advantages

- Gaseous expansion system compensates for shrinkage and settlement in the plastic state
- No metallic iron content to cause staining
- Pre-packed material overcomes onsite batching variations
- Develops high early strength without the use of chlorides
- High strength ensures the performance of grout even under severe operating conditions.
- Good bonding with substrate
- High pull out bond strength

Description

Conbextra BPG grout is supplied as a ready to use dry mixture. The addition of a controlled amount of clean water produces a pourable, non-shrink grout for bolt pockets up to 1000mm depth. (Bolt pocket size 150 x 150).

Conbextra BPG grout is a blend of Portland cement, graded fillers, graded coarse aggregates and chemical additives which impart controlled expansion in the plastic state whilst minimising water demand. The low water demand ensures high early strength. The graded filler is designed to assist uniform mixing and produce a consistent grout. The graded coarse aggregates minimise the heat of hydration and cracking and produce a dense hard grout.

Technical support

An experienced technical advisory team is available to give technical service on request.

Properties

Compressive strength (N/mm²) @ W/P 0.17 (BS 1881 - Part 116:1983)

1 day	30
3 days	50
7 days	60
28 days	70

Flexural strength(N/mm²)

@ 28 days (BS 4551, 1998) 11.0

Tensile strength (N/mm²)

@ 28 days (W/P - 0.17) 3.5

Pullout bond strength (N/mm²)

@ 28 days (W/P - 0.17) 20

Time for expansion (after mixing)

Start: 20 - 25 minutes
Finish : 120 -140 minutes

Fresh wet density

Approximately 2350- 2450 kg/m³ depending on actual consistency used.

Young's modulus (ASTM 464-94)

28 kN/mm²

Coefficient of thermal expansion

11x10⁻⁶/°C

Unrestrained expansion

1- 3% in the plastic state enables to over come shrinkage.

Pressure to restrain

0.004 N/mm² approx. plastic expansion

Specification Clauses

Performance specification

All bolt pocket grouting shown on the drawing must be carried out with a pre packed cement based product which is chloride free.

It shall be mixed with clean water to the required consistency. The grout must not bleed or segregate.

A positive volumetric expansion shall occur while the grout is plastic by means of gaseous system.

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The compressive strength of the grout must exceed 55 N/mm² at 7 days and 65 N/mm² at 28 days.

The flexural strength of grout must exceed 10 N/mm² @ 28 days. The fresh wet density of the mixed grout must exceed 2300 kg/m³.

The storage, handling and placement of the grout must be in strict accordance with the manufacturer's instructions.

Application instructions

Preparation

Bolt pockets

The inside of the pockets shall be cleaned free from debris etc., using oil free compressed air. If the walls of the pocket are smooth, they shall be roughened by using a wire brush.

If any oil or grease deposits are observed on the walls of the pocket they shall be cleaned thoroughly. The bolts shall be cleaned to remove any rust on its surface using wire brush or emery paper.

Pre-soaking

Several hours prior to grouting, the bolt pockets should be flooded with fresh water.

Immediately before grouting takes place any free water should be removed with particular care being taken to blow out all bolt holes and pockets.

Mixing and placing

For best results a mechanically powered grout mixer should be used. When quantities up to 50kg are used, a heavy duty slow speed drill (300 - 500 rpm) fitted with a suitable paddle shall be used. Larger quantities will require a high shear vane mixer. Normal concrete mixers can also be used.

To enable the grouting operation to be carried out continuously, it is essential that sufficient mixing capacity and labour are available. The use of a grout holding tank with provision to gently agitate the grout may be required.

Consistency of grout mix

The quantity of clean water required to be added to a 25kg bag to achieve the desired consistency is 4.25 litres (pourable).

The selected water content should be accurately measured into the mixer. The total content of the Conbextra BPG grout bag should be slowly added and continuous mixing should take place for 5 minutes. This will ensure that the grout has an even consistency without any bleed or segregation.

Placing

At 30°C the mixed Conbextra BPG shall be placed within 20 - 25 minutes of mixing to gain full benefit of the expansion process.

Conbextra BPG can be placed in depths up to 1000mm in a single pour incase of a 150 x 150mm pocket.

For larger depths grouting in stages (2 or 3) is recommended.

While grouting bolt pockets which are difficult to access, a funnel and hosepipe of 50mm internal dia shall be used.

Continuous pouring of grout is essential. Sufficient grout must be prepared before starting. The time taken to pour a batch must be regulated to the time to prepare the next one.

It is necessary to fill the pockets up to a height of 25mm below the top surface. This is to provide a mechanical key to the base plate grout.

Curing

On completion of the grouting operation, exposed areas should be thoroughly cured. This should be done by the use of Concure curing membrane, continuous application of water and/or wet hessian.

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Limitations

Low temperature working

When the air or contact surface temperatures are 10°C or below on a falling thermometer, warm water (30 - 40°C) is recommended to accelerate strength development.

Normal precautions for winter working with cementitious materials should be adopted.

High temperature working

At ambient temperatures above 40° C, cool water (below 20°C) should be used for mixing the grout prior to placement.

Estimating

Packaging

Conbextra BPG grout is supplied in 25 kg moisture resistant bags.

Yield

Allowance should be made for wastage when estimating quantities required. The approximate yield per 25 kg bag for different consistency is :

Consistency	Pourable
Yield (litres)	11.9

Storage

Shelf life

Conbextra BPG grout has a shelf life of 6 months if kept in a dry store in sealed bags. If stored in high temperature and high humidity locations, the shelf life may be reduced.

Precautions

Health and Safety instructions

Conbextra BPG grout is alkaline and should not come into contact with skin and eyes. Inhalation of dust during mixing should be avoided.

Gloves, goggles and dust mask should be worn.

If contact with skin occurs, it should be washed with water. Splashes to eyes should be washed immediately with plenty of clean water and medical advice sought.

Fire

Conbextra BPG grout is non flammable.

Additional information

For further details about the use and selection of grouts refer to the Fosroc Information module entitled 'Precision grouting in the Construction industry'.

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