

## Non-shrink cementitious pumping grout

### Uses

For pumped or free flow grouting, it can be used in a wide range of applications:

- As a heavy duty support beneath machine base plates
- Stanchion bases
- Ideal for horizontal ducts
- Narrow gap grouting

### Advantages

- Gaseous expansion system compensates for shrinkage and settlement in the plastic state
- No metallic iron content to cause staining
- Prepackaged material overcomes potential on-site batching variations
- Develops high early strength without the use of chlorides
- High ultimate strength and low permeability ensure the durability of the hardened grout
- The mix design of Conbextra P allows it to be pumped long distances into narrow gaps
- Facilitates rapid installation and early operation of plant

### Standards compliance

Conbextra P meets or exceeds the test requirements of ASTM C 1107.

### Description

Conbextra P cementitious grout is supplied as a ready to use dry powder requiring only the addition of a controlled amount of clean water to produce a free flowing non-shrink grout for gap thicknesses of 5 to 40 mm.

Conbextra P is an all fines mix based on Portland cements and additives which impart controlled expansion in the plastic state whilst minimising water demand. The low water demand ensures high early strength and long term durability. The material is designed to allow uniform mixing, and minimise segregation and bleeding.

### Specification

All grouting, where shown on the drawing, must be carried out with a prepackaged cement based product which is iron-free and chloride-free. It shall be mixed with clean water to the required consistency. The plastic grout must not bleed or segregate.

A positive volumetric expansion up to 4% shall occur while the grout is plastic by means of a gaseous system.

The compressive strength of the grout must exceed 35 N/mm<sup>2</sup> at 7 days and 50 N/mm<sup>2</sup> at 28 days.

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

### Properties

<b>Compressive strength</b>	:	20 N/mm <sup>2</sup> @ 1 day
<b>BS 1881: part 116 1983</b>		40 N/mm <sup>2</sup> @ 7 days
<b>flowable consistency</b>	:	58 N/mm <sup>2</sup> @ 28 days
<b>Flexural strength</b>	:	8.5 N/mm <sup>2</sup> @ 28 days
<b>BS 4551 pt. 15 1980</b>		
<b>flowable consistency</b>	:	
<b>Time for expansion</b>		
<b>Start</b>	:	15 minutes
<b>Finish</b>	:	2 hours
<b>Fresh wet density</b>	:	Approximately 2000 kg/m <sup>3</sup> depending on actual consistency used.
<b>Young's modulus</b>	:	14 KN/mm <sup>2</sup>
<b>ASTM C469-83</b>		
<b>Expansion</b>	:	An expansion up to 4% <b>characteristics</b> overcomes plastic settlement in the unset material.
<b>ASTM C827</b>		

# Fosroc Conbextra P

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## Instructions for use

### Preparation

#### *Foundation surface*

The substrate surface must be free from oil, grease or any loosely adherent material. If the concrete surface is defective or has laitance, it must be cut back to a sound base. Bolt holes and fixing pockets must be blown clean of any dirt or debris.

#### *Pre-soaking*

Several hours prior to grouting, the area of cleaned foundation 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.

#### *Base plate*

It is essential that this is clean and free from oil, grease or scale. Air pressure relief holes should be provided to allow venting of any isolated high spots.

#### *Levelling shims*

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

#### *Formwork*

The formwork should be constructed to be leakproof as Conbextra P is free flowing grout. This can be achieved by using foam rubber strip, or mastic sealant, beneath the constructed formwork and between joints.

In some cases it is practical to use a sacrificial semi-dry sand and cement formwork. The formwork should include outlets for pre-soaking.

When using Conbextra P as an underplate grout, the gap width and fluid head should be designed to ensure that the grout will flow through the gap as a continuous front. The gap thickness should be in the range of 5 to 40mm.

#### *Unrestrained surface area*

This must be kept to a minimum. Generally the gap width between the perimeter formwork and the plate edge should not exceed 75 mm on the pouring side and 25 mm on the opposite side. It is advisable, where practical, to have no gap at the flank sides.

#### *Cable duct grouting*

All cable ducts must be thoroughly cleaned. Those ducts formed without metal sheaths should be flushed with water after which all surplus water must be removed. Cable anchorages should be sealed before the duct grouting is carried out.

### Mixing

For best results a mechanically powered grout mixer should be used. When quantities of up to 60 kg are used, a slow speed drill fitted with a Fosroc Mixing Paddle (MR3) is suitable. Larger quantities will require a high shear vane mixer. Do not use a colloidal impeller mixer.

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.

#### *Water addition*

9 to 11 litres of clean water is required to be added for each 25 kg bag to achieve a pumpable / flowable consistency.

The selected water content should be accurately measured into the mixer. The total contents of the Conbextra P bag should be slowly added and continuous mixing should take place for 5 minutes. This will ensure that the grout has a smooth even consistency.

### Application

Place the grout within 20 minutes of mixing to gain full benefit of the expansion process.

Conbextra P can be placed in thicknesses of up to 40 mm in a single pour when used as an underplate grout.

Any bolt pockets must be grouted prior to grouting between the substrate and the base plate.

Continuous grout flow is essential. Sufficient grout must be prepared before starting. The time taken to pour a batch must be regulated to ensure adequate timing for the preparation of the next one.

Pouring should be from one side of the void to eliminate any air or pre-soaking water becoming trapped under the baseplate. It is advisable to pour the grout across the shortest distance of travel. The grout head must be maintained at all times so that a continuous grout front is achieved.

Where large volumes have to be placed Conbextra P may be pumped. A heavy duty diaphragm pump is recommended for this purpose. Screw feed and piston pumps may also be suitable.

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## Curing

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

## Cleaning

Conbextra P should be removed from tools and equipment with clean water immediately after use. Cured material can be removed mechanically, or with Fosroc Acid Etch\*\*.

## Sampling procedure

All sampling procedures for Conbextra P are to be conducted within the confines of a temperature controlled laboratory. The reactive agents within Conbextra P do not permit site sampling and transport. The procedure for sampling is to be as follows:

- 1) A full and unopened bag of Conbextra P to be selected from the batch allocated for site use and despatched to the testing laboratory.
- 2) The Conbextra P shall be mixed in the laboratory following the instructions listed on the product data sheet.
- 3) All sampling shall be conducted using 100mm cube moulds, the use of 150mm cube moulds being prohibited.
- 4) When mixed, the Conbextra P shall be poured into release agent treated 100mm cube moulds in two lifts of 50mm each with a 60 second interval between pours. The Conbextra P shall not be tamped but gentle tapping of the cube mould is permitted to promote the release of air.
- 5) Fill three 100mm cube moulds with the Conbextra P for each curing time interval specified. Mould filling should be completed within 20 minutes of the end of the mixing cycle. The filled moulds should be stacked three high on top of each other to provide conditions of restraint. The top mould should be restrained either with a weighted metal plate or an empty cube mould.
- 6) The cubes should be stored at a  $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$  temperature for 24 hours in the laboratory. After 24 hours the cubes are to be demoulded and placed in a water curing tank maintained at a  $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$  temperature. The cubes are then to be cured in accordance with BS1881.
- 7) Cubes are to be crushed in calibrated compression testing apparatus with a rate of loading not exceeding 180kN per minute. Types of cube fracture are to be recorded. Three cubes are to be crushed for each curing time interval specified. Results are to be calculated and issued as an average.

## High temperature working

It is suggested that, for temperatures above  $35^{\circ}\text{C}$ , the following guidelines are adopted as good working practice:

- (i) Store unmixed material in a cool (preferably temperature controlled) environment, avoiding exposure to direct sunlight.
- (ii) Keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment which will come into direct contact with the material itself.
- (iii) Try to eliminate application during the hottest times of the day and in direct sunlight.
- (iv) Make sufficient material, plant and labour available to ensure that application is a continuous process.
- (v) Water (below  $20^{\circ}\text{C}$ ) should be used for mixing the grout prior to placement.

## Limitations

- Grouts should not be placed in any unrestrained situation, i.e. base plate plinths, etc. Failure to comply may lead to crack development in the grout.

## Technical support

Fosroc offers a comprehensive technical support service to specifiers, end users and contractors. It is also able to offer on-site technical assistance, an AutoCAD facility and dedicated specification assistance in locations all over the world.

## Estimating

### Supply

<b>Conbextra P</b>	:	25 kg bags
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### Yield

<b>Conbextra P</b>	:	17.5 litres/ 25 kg bag (approx.)
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Allowance should be made for wastage when estimating quantities required.

## Storage

### Shelf life

Conbextra P has a shelf life of 12 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.



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## Precautions

### Health and safety

Conbextra P is alkaline and should not come into contact with skin and eyes. Avoid inhalation of dust during mixing. Gloves, goggles and dust mask should be worn. If contact with skin occurs, wash with water. Splashes to eyes should be washed immediately with plenty of clean water and medical advice sought.

### Fire

Conbextra P is non-flammable.

## Additional Information

Fosroc manufactures a wide range of complementary products which include :

- waterproofing membranes & waterstops
- joint sealants & filler boards
- cementitious & epoxy grouts
- specialised flooring materials

Fosroc additionally offers a comprehensive package of products specifically designed for the repair and refurbishment of damaged concrete. Fosroc's 'Systematic Approach' to concrete repair features the following :

- hand-placed repair mortars
- spray grade repair mortars
- fluid micro-concretes
- chemically resistant epoxy mortars
- anti-carbonation/anti-chloride protective coatings
- chemical and abrasion resistant coatings

For further information on any of the above, please consult your local Fosroc office - as below.

\* Denotes the trademark of Fosroc International Limited

† See separate data sheet



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## Important note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard Conditions for the Supply of Goods and Service. **All Fosroc datasheets are updated on a regular basis. It is the user's responsibility to obtain the latest version.**

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