

Antiwashout, Non-shrink, High strength cementitious underwater grout

Uses

As free flow or pumped material for underwater grouting without significant 'wash-out' of the cement phase.

Advantages

- Shrinkage compensation : Gaseous expansion system compensates for shrinkage and settlement in the plastic state, associated with conventional cement repair materials.
- Anti wash out : No risk of significant wash-out of cement phase when placed underwater. Displaces water effectively.
- Low porosity : Better steel protector than concrete.
- High bond strength : No primer required.
- High early strength : Facilitates rapid installation and early operation of plant.
- Durability : High early and ultimate strength combined with exceptional resistance to attack by freeze/thaw cycling.
- Reliability : Factory controlled, prepacked components. Only the addition of water is required on site.
- Chloride free : Composition allows high early strength development without the use of chlorides.

Standards Compliance

Conbextra UW is tested using the appropriate sections of the following specifications : BS 1881, BS 4550 & BS455.

Description

Conbextra UW is supplied as a ready to use dry powder requiring only the addition of water to produce a free flowing, non shrink, grout material which exhibits exceptional resistance to 'washing out' of the cement phase when placed in stationary or moving water. The material is a mixture of specially processed cement, with carefully graded fine aggregate. Additives impart controlled expansion, water reduction and non washout characteristics. The aggregate grading is designed to aid uniform mixing, minimise segregation and bleeding whilst assisting the flow characteristics.

Technical Support

The company provides a technical advisory service supported by a team of specialists in the field.

Properties

Compressive strength : To simulate site conditions, compressive strength test cubes were cast under water and under restraint. (at 27°C)

Compressive strength N/mm ²	1 day	3 days	7 days	28 days
	15	30	44	53

Adhesion to submerged concrete : To simulate site conditions, direct tensile specimens were prepared under water and under restraint. The specimens were cured submerged for 14 days at 30°C at time of test. The tensile strength of the substrate concrete was 3.1 N/mm².

Density of hardened material : 2100 kg/m³.

Setting time : Dependent on temperature.

Typical values (at 30°C) are as follows :

	Initial	Final
Setting time	4 hrs	5 hrs

Temperature limitation : Should not be applied below 5°C.

Expansion characteristics : Controlled expansion occurs in the unset material to ensure that the material when cured, will continue to occupy its original volume within the confines of the void in which it was placed.

Specification clauses

Performance specification

All underwater grouting (specify details and areas of application) must be carried out with a prepackaged cement based product, which shall be mixed with water on site at a Water Powder ratio of 0.22. The grout must not bleed or segregate, must be iron-free and chloride free. Expansion of 1 - 4% shall occur while the grout is plastic by means of a gaseous system. The grout shall contain special admixtures to minimise washout in underwater applications. The compressive strength of the grout must exceed 30 N/mm² at 7 days and 50N/mm² at 28 days.

The grout must be stored, handled and placed strictly in accordance with the manufacturer's instructions.

Supplier specification

All underwater grouting (specify details and areas of application) must be carried out using Conbextra UW manufactured by Fosroc Chemicals (I) Pvt. Ltd, applied strictly in accordance with the manufacturer's technical data sheet.

Conbextra UW

Application instructions

Preparation

Substrate must be clean and sound. All loose material must be removed. Substrates which are permanently immersed should be sand blasted or cleaned with a high pressure water jet. Non-immersed or intermittently immersed substrates can also be prepared using these techniques. Depending on the circumstances, scabbling or bush hammering may be appropriate.

In view of the fluid nature of Conbextra UW, all shuttering must be leakproof. This can be achieved using foam rubber sealing strips at the edges.

Mixing

The quantity of water required to achieve a fluid consistency must be accurately measured for each mix. Each 25 kg bag requires 5.5 litres of water.

A mechanically powered mixer must be used. Ensure that the machine capacity and the number of operatives is adequate to enable grouting to be carried out as a continuous operation.

Place the specified amount of water in the mixer. Slowly add the contents of Conbextra UW pack, mixing continuously. When all contents are added, mix continuously for a minimum of 5 minutes making sure that a smooth, even mix is obtained. (Fluidity increases with increased mixing). Pass the mixed material through a 5mm sieve to remove any lumps prior to placing.

Important : The need to observe the accurate gauging of water addition and the stated mixing time should be stressed to all operatives and, wherever possible, included in specifications.

Placing

Place the mixed material within 20 minutes of mixing to gain full benefit of the expansion process. Continuous material flow is required and the material should be poured or pumped through a flexible tube, minimum diameter 50mm, to the lowest point in the form. At the start of the operation, the material flow should be restricted in order to avoid any water entrapment. The bottom of the tube may be raised as necessary to reduce any back pressure but should not be raised above the level of

the material.

Application thickness

Conbextra UW may be placed in thicknesses upto 80mm in one pour when placed above water. When placed under water, the heat sink effect in this environment permits thicknesses upto 150mm to be placed. For thicker sections upto 200mm above water and 400mm under water, it is necessary to fill out Conbextra UW using a clean, rounded and well graded aggregate in the size range 2mm upto 10mm. The quantity of aggregate added should not exceed 1 part aggregate to 1 part Conbextra UW by weight. For such mixes a concrete mixer must be used. Unrestrained surface area should be kept to a minimum.

Curing

Curing will not be required in intermittently or totally submerged situations. However, when cast above water, all exposed surfaces should be thoroughly cured.

Cleaning

Because of its water resisting properties, equipment used for Conbextra UW will be harder to wash than with a cementitious grout. Use of hot water greatly reduces the time required for cleaning. Do not use hot water for mixing with Conbextra UW.

Estimating

Packaging and coverage

	Pack	Yield
Conbextra UW	25 kg	14.5 litres

Storage

Shelf life

6 months shelf life if kept in a dry store in sealed bags.

Precautions

Health & Safety

Conbextra UW is alkaline in nature. Gloves should be worn. Splashes of grout to the skin or eyes should be washed off with clean water. In the event of prolonged irritation, seek medical advice.

Fire

Conbextra UW is non-flammable



Conbextra UW



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Important note :

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products whether or not in accordance with any advice, specification, recommendation or information given by it.

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