

Formulated anti-wash out, specialist grout for underwater grouting applications

Uses

Conbextra UW is used for free flow or pumped grouting applications underwater or in tidal zones. There will be no significant 'wash-out' of the cement phase. Applications include bridge columns, quay pillars, concrete piling, slipways and dams.

Advantages

- No risk of significant 'wash-out' of cement phase when placed underwater
- Displaces water effectively
- Gaseous expansion system compensates for shrinkage and settlement in the plastic state
- High early and ultimate strength
- Chloride free
- Pre-packaged needing only on-site addition of water

Description

Conbextra UW is supplied as a ready to use powder. The addition of a controlled amount of clean water produces a free flowing grout. The grout exhibits exceptional resistance to 'washing-out' of the cement phase when placed in stationary or moving water.

Conbextra UW is a blend of cement, graded fine aggregate and chemical additives which impart controlled expansion, water reduction and non wash-out characteristics. The aggregate grading minimises segregation and bleeding whilst assisting the flow characteristics.

Maximum aggregate size for pumping is 0.3mm.

Specification Clauses

Supplier specification

All grouting (specify details and areas of application) must be carried out using Conbextra UW manufactured by Fosroc and used in accordance with the manufacturer's Technical Data Sheet.

Performance specification

All grouting (specify details and areas of application) must be carried out with a cement based product which is iron free and chloride free.

It shall be mixed with clean water at the water/powder ratio of 0.22 and not exhibit bleed or segregation. A volumetric expansion of up to 3% (by means of a gaseous system) shall occur while the grout is in a plastic state.

The grout shall contain admixtures to minimise wash-out in underwater applications.

The compressive strength of the grout must exceed 30MPa at 7 days and 50MPa at 28 days.

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

Application Instructions

Preparation

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 to a sound base.

Substrates which are permanently immersed should be sand-blasted or cleaned with a high pressure water jet. Non-immersed or intermittently immersed substrates can be prepared using these techniques. Alternatively scabbling or bush hammering may be appropriate.

Formwork

The formwork should be constructed to be leakproof as Conbextra UW is a free flowing grout. This can be achieved by using foam rubber strip.

Mixing

A forced-action mixer is essential. Mix for 3 to 5 minutes at a slow speed (400/500rpm) in a suitably sized drum using appropriate equipment such the Ransom MDR59 140 x 600 M14 Helical mixing paddle (product code: N4020892-UNIT) fitted to a heavy-duty 1600W mixer, such as Ransom RAN160 (product code: NP7AN160-UNIT) or equivalent.

Larger quantities will require a high shear vane mixer. Do not use a colloidal impeller mixer.

It is essential that machine mixing capacity and labour availability is adequate to enable the grouting operation to be carried out continuously. This may require the use of a holding tank with provision for gentle agitation to maintain fluidity.

Measure accurately 4.4 litres of water for each 20kg bag into the mixer. Slowly add the Conbextra UW whilst mixing continuously. When all the powder is added mix continuously for 5 minutes ensuring a smooth even grey coloured consistency is obtained. (Fluidity will increase with increased mixing).

Fosroc® Conbextra® UW

Properties

Test Method	Standard	Result				
Compressive Strength	AS 1478.2:2005	Consistency	Water Addition	1 Day	7 Days	28 Days
		Flowable	4.4 L	25 MPa	44 MPa	53 MPa
Flexural Strength (Modulus of Rupture)	AS 1012.11 - 2000	1 Day 7 Days 28 Days	3.4 MPa 7.3 MPa 8.8 MPa			
Indirect Tensile Strength	AS 1012.10.2000	1 Day 7 Days 28 Days	1.7 MPa 3.5 MPa 4.1 MPa			
Tensile Bond Strength to submerged concrete		2.1 MPa				
Setting Time	AS 1012.18:1996	5.0 hours - initial set 7.5 hours - final set				
Fresh Wet Density		2050 kg/m ³ - depending on consistency used				
Alkali reactive particles	Rapid Mortar Bar Test (RTA T363)	Non-reactive				
Flow Characteristics	AS 1478.2:2005	400mm (Flow Trough)				
Minimum Thickness		Above Water	Below Water			
		10mm	10mm			
Maximum Thickness		80mm	150mm			

Clarification of property values: The typical properties given above are derived from laboratory testing. Compressive strengths stated above were measured using cube samples. Test results obtained will vary if carried out to an alternative standard or sample dimensions are used.

Test Results to ASTM Specification C1107: 2001

Test Method	Standard	Result	
Flow Consistency	ASTM C1437:2007	132%	
Setting Time	ASTM C191:2008	Initial: Final:	5.4 hours 6.1 hours
Plastic Volume Change	ASTM C827:2010	+0.57%	
Hardened Volume Change	ASTM C1090:2010	1 day	0.68%
		3 days	0.68%
		14 days	0.68%
		28 days	0.69%
		56 days	0.67%
Compressive Strength	ASTM C109:2011b	1 day	27.9 MPa
		3 days	46.4 MPa
		7 days	50.1 MPa
		28 days	57.6 MPa

Note: All tests were carried out at 25°C ± 2°C until the age of the test. All above test results are independent third party results. Copies of these test results are available on request. The tests were carried out at a water addition rate of 4.4L per 20kg.

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Conbextra® UW

Placing

Place the grout within 20 minutes of mixing to gain the full benefit of the expansion process. Continuous grout flow is essential to prevent any air or water entrapment.

The mixed grout should be poured or pumped through a flexible tube, having a minimum diameter of 50mm, to the lowest point in the form.

Care must be taken at the start of the grouting operation to restrict the grout flow so that water is not entrapped.

The tube may be raised as necessary to reduce any back pressure. It should not be raised above the surface level of the grout.

Conbextra UW can be placed in thicknesses from 10mm up to 80mm in one pour when used above water. When used underwater, the heat sink effect in this environment will allow thicknesses of up to 150mm to be placed.

Adding Aggregate

For thicker sections, up to 200mm above water and 400mm underwater, it is necessary to fill out Conbextra UW using Conbextra Grout Aggregate. The ratio of Conbextra Grout Aggregate added to Conbextra UW should not exceed 10kg Conbextra Grout Aggregate per 20kg bag of Conbextra UW. For such mixes a concrete mixer should be used. Unrestrained surface area should be kept to a minimum.

Slowly add Conbextra Grout Aggregate to mixed grout and mix for a further 2 minutes. Note: The top end water content stated on this Technical Data Sheet (4.4 litres) should not be exceeded.

Typical yield increase is approximately 4 litres per 10kg of aggregate added.

The addition of aggregate to grout will reduce the flow characteristics of the product. If high flow performance is required it is not recommended that aggregate be added.

Curing

Curing will not be required in intermittently or totally submerged situations. However, when cast above water, 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.

Cleaning

Because of its water resisting properties, equipment used for Conbextra UW will be harder to wash than with other cementitious grouts. The use of hot water for cleaning purposes will assist. Cured material can only be removed mechanically.

Limitations

Conbextra UW must not be applied below 5°C.

Supply

Conbextra UW 20kg	FC501030-20KG
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Yield

11.60 litres per 20kg bag when mixed with 4.4 litres of water

Allowance should be made for wastage when estimating quantities required.

Storage

Conbextra UW has a shelf life of 36 months from date of manufacture if kept in the original, unopened bags. Refer to the manufacture date indicated on the packaging. Do not use if there are lumps in the product, or a loss of workability (requiring more water to be added) is experienced.

If stored in high temperature and high humidity locations, the shelf life may be reduced.

Important notice

A Safety Data Sheet (SDS) is available from the Fosroc website. Read the SDS and TDS carefully prior to use as application or performance data may change from time to time. In emergency, contact any Poisons Information Centre (phone 13 11 26 within Australia) or a doctor for advice.

Product disclaimer

This Technical Data Sheet (TDS) summarises our best knowledge of the product, including how to use and apply the product based on the information available at the time. You should read this TDS carefully and consider the information in the context of how the product will be used, including in conjunction with any other product and the type of surfaces to, and the manner in which, the product will be applied. Our responsibility for products sold is subject to our standard terms and conditions of sale. Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.