Fosroc® Conbextra® HF

constructive solutions

Highly fluid, dual shrinkage compensated, cementitious grout for gaps 10mm to 125mm thick

Uses

Conbextra HF is used for free flow precision grouting in a wide range of applications including:

- Critical machine base plates, sole plates and columns
- Pumped grouting applications
- Grouting applications where pouring access is restricted

Advantages

- Excellent initial flow and flow retention - Suitable for pumping or pouring
- Rapid strength gain facilitates efficient installation and operation of plant
- High ultimate strength and low permeability ensure durability of the hardened grout
- Hydrogen-free gaseous expansion
- Chloride free
- RCS (Respirable Crystalline Silica) Hazard Free
- Non-shrink - according to ASTM C1107:2020

Standards Compliance

AS 1478.2-2005 Appendix E Early Volume Change

AS 1478.2-2005 Table 4.1.2.2 Consistency

Description

Conbextra HF, dual shrinkage compensated (Class A / Class C) cementitious non-shrink grout, is supplied as a ready to use dry powder. The addition of a controlled amount of clean water produces a free-flowing precision grout for gap thicknesses 10mm to 125mm. In addition the low water requirement ensures high early strength and long term durability.

Conbextra HF is a blend of portland cements, graded fillers and chemical additives which impart controlled expansion in both the plastic and hardened states.

The filler grading minimises segregation and bleeding over a wide range of application consistencies.

Conbextra HF is not hazardous in accordance with Australian Inventory of Industrial Chemicals. Contains <0.1% RCS.

Maximum aggregate size for pumping is 2.5mm.

Properties

Test Method	Standard	Result				
Compressive Strength	AS 1478.2:2005	Consistency	Water Addition	1 Day	7 Days	28 Days
		Stiff	2.6-3.4	50	68	77
		Plastic	3.4-3.6	38	53	64
		Flowable	3.6-3.8	31	48	62
		Fluid	3.8-4.0	27	46	60
Flexural Strength (Modulus of Rupture)	AS 1012.11 - 2000	1 Day 7 Days 28 Days	3.2 MPa 9.5 MPa 10.0 MPa			
Indirect Tensile Strength	AS 1012.10.2000	1 Day 7 Days 28 Days	2.5 MPa 4.5 MPa 4.7 MPa			
Setting Time	AS 1012.18:1996	5.5 hours - initial set 7.5 hours - final set				
Fresh Wet Density		2200 kg/m³ - depending on consistency used				
Alkali reactive particles	Rapid Mortar Bar Test (RTA T363)	Non-reactive				
Flow Characteristics	AS 1478.2:2005	19-25 seconds (Flow Cone)				
Minimum Thickness **Maximum Thickness**		10mm 125mm				

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.

Note: Compressive strengths stated were measured at bottom end water, eg., the 28 day strength of 62MPa for flowable consistency was obtained at a water addition of 3.6 litres water per 20kg bag of Conbextra HF.

Fosroc®
Conbextra® HF

Test Results to ASTM Specification C1107: 2020

Test Method	Standard	Result	
Flow Consistency	ASTM C939:2016a	>145%	
Setting Time	ASTM C953:2017	Initial: Final:	300 mins 320 mins
Change in Height at Early Age at Final Setting Time	ASTM C827:2016	+0.40%	
Height Change of Hardened Grout Moist Cure	ASTM C1090:2015	1 day 3 days 14 days 28 days 28 days + 28 days in air	+0.02% +0.06% +0.10% +0.11% +0.11%
Compressive Strength	ASTM C109:2020b	1 day 3 days 7 days 28 days	29.8 N/mm^2 47.5 N/mm^2 58.6 N/mm^2 65.8 N/mm^2

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 3.6 litres per 20kg.

Flow properties of mixed grout

The flow distances given below in (mm) are intended as a guide. Actual flow distances will vary depending on site conditions:

Gap Depth (mm)	Flowable 100mm head (mm)	Flowable 250mm head (mm)	Fluid 100mm head (mm)	Fluid 250mm head (mm)
10	360	1200	900	2500
20	950	2600	1900	3000
30	1500	3000	3000	3000+
40	2200	3000+	3000+	3000+
50	3000	3000+	-	-

Preparation

Foundation surface

The substrate surface must be free from oil, grease or any loosely adherent material. Concrete laitance should be removed using low impact scabbling or with needle guns to the degree where aggregate is starting to show.

Bolt holes or fixing pockets must be blown clean of any dirt or debris. Bolt holes should also be roughen up using mechanical means. These may need to be grouted beforehand.

Base plate / grout interface

It is essential that this is clean and free from oil, grease, scale, paint or coating of any kind. 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 HF is a free flowing grout. This can be achieved by using foam rubber strip or silicone sealant beneath the constructed formwork and between joints.

The formwork should include outlets for draining the pre-soaking water.

The unrestrained surface area of the grout must be kept to a minimum. Generally the gap width between the perimeter formwork and the plate edge should not exceed 150mm on the pouring side and 50mm on the opposite side. There should be no gap at the flank sides.

Pre-soaking

Pre-soaking the formed grouting area with clean water helps to ensure good adhesion of the grout at the interface of the concrete foundation and improves the flow of the grout during the installation. The area should be filled with clean water for a **minimum 2 hours** before the grouting takes place.

Immediately before grouting takes place, any free water should be removed by draining or vacuum.

Particular care should be taken to blow out any bolt holes and pockets.

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 as a 120/140mm helical mixing paddle fitted to a heavy-duty 1600W mixer.

The selected water content should be accurately measured into the mixing bucket. While mixing, slowly add the total contents of the Conbextra HF bag, mix continuously for a minimum of 3 minutes, (up to 5 minutes) to ensure a smooth, even consistency is obtained. Aways add the powder to the water.

Required Consistency	Litres of water added per 20kg bag	Yield - litres of mixed material
Stiff	2.6 - 3.4	10.4
Plastic	3.4 - 3.6	10.7
Flowable	3.6 - 3.8	10.8
Fluid	3.8 - 4.0	10.9

Mixing larger volumes

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 grouting operation to be carried out continuously. This may require the use of a holding tank with provision for gentle agitation to maintain fluidity.

Placing

Place the grout within 15 minutes of mixing to gain the full benefit of the expansion process.

Conbextra HF can be placed in thicknesses from 10mm up to 125mm in a single pour when used as an underplate grout. Where the grouting gap beneath the base plate exceeds the maximum thickness allowed, then the grout can filled / bulked out with **Conbextra Grout Aggregate*** to minimise exotherm heat build up. Alternatively **Conbextra Deep Pour** is available for pours up to 500mm thick.

Filling/bulking out of the grout should not exceed a ratio of 1 part Conbextra Grout Aggregate to 2 parts Conbextra HF (by weight). Please refer to the Conbextra Grout Aggregate TDS for more guidance on bulking out of cement based grouts.

Any bolt pockets must be grouted prior to grouting between the substrate and the base plate. Continuous grout flow is essential.

For larger pours the grout may be hand placed or pumped into a removable hopper (trough).

Sufficient grout must be available prior to starting and the time taken to pour a batch must be regulated to the time taken to prepare the next one. Continual grout pour must be ensured.

The mixed grout should be poured only from one side of the void to eliminate the entrapment of air or surplus pre-soaking water. This is best achieved by pouring 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.

Pumping

Where large volumes have to be placed Conbextra HF may be pumped. A heavy duty diaphragm pump is recommended for this purpose. Screw feed and piston pumps may also be suitable. Maximum aggregate is 2.5mm. Ensure pump is capable of pumping this size aggregate.

Curing

On completion of the grouting operation, exposed areas should be thoroughly cured. This should be done by the use of Concure A99 curing membrane or wet hessian.

Cleaning

Conbextra HF should be removed from tools and equipment with clean water immediately after use. Cured material can be removed mechanically.

Limitations

Low temperature working

When the air or contact surface temperatures are 5°C or below on a falling thermometer, warm water (30-40°C) is recommended to accelerate strength development.

For ambient temperatures below 10°C the grout consistency should be flowable and the formwork should be maintained in place for at least 36 hours.

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

High temperature working

At ambient temperatures above 35°C the mixed grout should be stored in the shade. Cool water (below 20°C) should be used for mixing the grout.

Fosroc®
Conbextra® HF

Supply

Conbextra HF is supplied in 20kg moisture resistant plastic bags.

Conbextra HF 20kg:	FC501050-20KG

Yield

Consistency (AS 1478.2-2005 Table 4.1.2.2)	Yield / 20 kg bag (Litres of mixed material)
Stiff	10.4 litres
Plastic	10.7 litres
Flowable	10.8 litres
Fluid	10.9 litres

Storage

Conbextra HF 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.

Parchem Construction Supplies Pty Ltd
1956 Dandenong Rd Clayton VIC 3168
Ph: 1800 812 864
www.fosroc.com.au ABN 80 069 961 968

Distributed in New Zealand by: Concrete Plus Ltd
150 Hutt Park Road Gracefield Ph: 0800 657 156
www.fosroc.co.nz NZBN 9429033691282