Fosroc® Conbextra® HS

constructive solutions

High flow, high ultimate strength, dual shrinkage compensated, precision cementitious grout

Uses

Heavy duty precision grouting of gaps from 10mm to 125mm, where high flow and high ultimate strength is required. Applications include grouting of:

- Baseplates and soleplates of large machines subject to moderate dynamic loads
- Crane rail soleplates, beams, columns and structural building members

Advantages

- Non-metallic dual expansion system (Class A & Class C) compensates for shrinkage in both the plastic and hardened states
- Non-shrink according to ASTM C1107:2020
- Excellent initial flow and flow retention suitable for large and small grout pours
- 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
- Suitable for pumping or pouring over a large range of application consistencies and temperatures
- RCS (Respirable Crystalline Silica) Hazard Free*

Description

Conbextra HS, is a dual shrinkage compensated (Class A & Class C), ultra high-strength cementitious grout. 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 HS 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 HS is classified not hazardous for RCS in accordance with Australian Inventory of Industrial Chemicals; contains <0.1% RCS.

Maximum aggregate size for pumping is 1.0mm.

Standards Compliance

AS1530.3-1999 Methods for Fire Test on Building Materials

Ignitability Indicies: 0
Spread of Flame Index: 0
Heat Evolved Index: 0
Smoke Developed Index: 0-1

Copies of the test report are available from the Fosroc web site.

Properties

Test Method	Standard	Result						
Compressive Strength (MPa):	AS 1478.2:2005 Tested at 23°C	Consistency	8 hrs	12 hrs	1 Day	7 Days	28 Days	56 Days
		Flowable	5	20	55	80	100	105
		Fluid	-	13	40	70	85	90
	AS 1478.2:2005 Tested at 30°C	Flowable	26	40	60	90	100	105
		Fluid	20	30	50	80	85	90
Flexural Strength (Modulus of Rupture) (MPa):	AS 1012.11:2000		-	-	5.8	11.4	13.7	-
Indirect Tensile Strength (MPa):	AS 1012.10:2000		-	-	3.6	5.1	7.0	-
Modulus of Elasticity (GPa):	AS 1012.17:1997		-	-	-	-	38.0	-
Setting Time:	AS 1012.18:1996	2.5 hours - initial set 5.0 hours - final set						
Fresh Wet Density:	ASTM C 185:2020	2330 kg/m³ - Flowable consistency						
Expansion Characteristics	AS1478.2-2005 ASTM C1107-91	An expansion of up to 2% overcomes plastic settlement Conforms to expansion in hardened state for drying shrinkage						

Alkali reactive particles	Rapid Mortar Bar Test (RTA T363)	Non-reactive
Flow Characteristics	AS 1478.2:2005	600mm (Flow Trough)
Flow Consistency:	ASTM C939:2020	>145%
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 addition. Guidelines for sampling grout on site for compressive strength testing are available on the Fosroc website.

Test Results to ASTM Specification C1107: 2020

Test Method	Standard	Result	
Flow Consistency	ASTM C939:2016a	>145%	
Setting Time	ASTM C953:2017	Initial: Final:	120 mins 135 mins
Change in Height at Early Age at Final Setting Time	ASTM C827:2016	+1.29%	
Height Change of Hardened Grout Moist Cure	ASTM C1090:2015	1 day 3 days 14 days 28 days 28 days + 28 days in air	+0.01% +0.02% +0.04% +0.04% +0.04%
Compressive Strength	ASTM C109:2020b	1 day 3 days 7 days 28 days	61.8 N/mm^2 95.6 N/mm^2 98.3 N/mm^2 119.3 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 2.7 litres per 20kg. Guidelines for sampling grout on site for compressive strength testing are available on the Fosroc website.

Flow characteristics 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+

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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. For maximum bond, surfaces should be abraded or roughened, preferably by mechanical means such as needle gun, grit blasting, grinding. Bolt holes or fixing pockets must be blown clean of any dirt or debris. 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 HS is a free flowing grout. This can be achieved by using foam rubber strip or Construction Silicone 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 (400/500 rpm) in a suitably sized drum using appropriate equipment such as a 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 HS bag, mix continuously for 3 to 5 minutes, ensuring 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
Flowable	2.7	9.8
Fluid	3.0	10.1

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.

The selected water content should be accurately measured into the mixer. Slowly add the total contents of the Conbextra HS bags, mix continuously for 3 to 5 minutes, ensuring a smooth, even consistency is obtained.

Placing

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

Conbextra HS can be placed in thicknesses up to 125mm in a single pour. Any bolt pockets must be grouted prior to grouting between the substrate and the base plate. Continuous grout flow is essential.

Where grout gap depth is in excess of 125mm up to 500mm, **Conbextra Deep Pour** should be considered or the Conbextra HS bulked out with **Conbextra Grout Aggregate**.

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

Removable hopper: 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.

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Pumping

Where large volumes have to be placed Conbextra HS 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 1.0mm. Ensure the selected 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** curing membrane, continuous application of water and/or wet hessian.

Cleaning

Conbextra HS 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.

Supply

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

Conbextra HS 20kg:	FC502000-20KG

Yield

Allowance should be made for wastage when estimating quantities required. The approximate yield for different consistencies is:

Yield per 20kg bag mixed	
Flowable consistency	9.8 litres
Fluid consistency	10.1 litres

Storage

Conbextra HS 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.

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.

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