

## Conbextra HF

**High fluid flow, dual shrinkage compensated, precision grout - (gaps 10 mm to 125 mm thickness)**

### USES

Conbextra HF is used for free flow precision grouting in a wide range of applications. These critical uses include heavy duty support beneath machine base plates and bridge bearings.

### ADVANTAGES

- Unique non-metallic dual expansion system compensates for shrinkage in both the plastic and hardened states
- 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

### STANDARDS COMPLIANCE

AS 1478.2-2005 Appendix E Early Volume Change

AS 1478.2-2005 Table 4.1.2.2 Consistency

### DESCRIPTION

Conbextra HF, shrinkage compensated cementitious precision 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 up to 125 mm. 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.

Maximum aggregate size for pumping is 2.5 mm.

### TECHNICAL SUPPORT

Parchem offers a comprehensive range of high performance, high quality construction products. In addition, the company offers a technical support package to specifiers and contractors as well as technical advice from staff experienced in the construction industry.

### SPECIFICATION CLAUSES

#### SUPPLIER SPECIFICATION

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

#### PERFORMANCE SPECIFICATION

All precision grouting (specify details and areas of application) must be carried out with a pre-packaged cement based product, which is non-metallic and chloride-free.

It shall be mixed with clean water to the required consistency and not exhibit bleed or segregation.

A volumetric expansion of up to 3% shall occur while the grout is in a plastic state by means of a gaseous, hydrogen-free system. The grout must also be compensated for shrinkage in the hardened state.

The compressive strength of the grout must exceed 40 MPA at 7 days and 60 MPA 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.

## PROPERTIES

Consistency	Water addition	Compressive Strength (MPa), AS 1478.2-2005		
		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

Note: Consistency measured in accordance with AS 1478.2-2005 table 4.1.2.2.

Note: Compressive strengths stated were obtained under controlled conditions and were measured at bottom end water, eg., the 28 day strength of 57 MPa for flowable consistency was obtained at a water addition of 3.8 litres water per 20kg bag of Conbextra HF.

### Flexural strength @ w/p of 0.19

(AS 1012.11-2000:)	2.5 MPa @ 1 day
	8.0 MPa @ 7 days
	9.5 MPa @ 14 days
	10.0 MPa @ 28 days

### Flow characteristics

(AS 1478.2-2005:) 19 - 25 seconds

### Setting time

(AS 1012.18 - 1996)

Initial set:	5.5 hours
Final set:	7.5 hours

### Time for expansion

<b>Plastic state:</b>	Start	15 minutes
	Finish	initial set
<b>Hardened state:</b>	Start	initial set
	Finish	up to 28 days

**Fresh wet density:** Approximately 2200 kg/m<sup>3</sup> depending on actual consistency used

**Expansion characteristics:** An expansion of up to 3% when measured according to AS 1478.2-2005 Appendix E overcomes plastic settlement in the unset material.

## 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 or 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. Particular care should be taken to blow out all bolt holes and pockets.

### 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 Construction Silicone\* 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 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 150 mm on the pouring side and 50 mm on the opposite side. There should be no gap at the flank sides.

### MIXING

For best results a mechanically powered grout mixer should be used. For quantities up to 50 kg a slow speed drill fitted with a high shear paddle is suitable. 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 HF bag, mix continuously for 5 minutes, ensuring a smooth, even consistency is obtained.

### CONSISTENCY OF MIXED GROUT

To achieve consistencies which are defined in CRD-C621-82A, the amount of clean water that is added is:

Consistency (AS 1478.2-2005 Table 4.1.2.2)	Water Addition (per 20Kg bag)
Stiff	2.6 - 3.4
Plastic	3.4 - 3.6
Flowable	3.6 - 3.8
Fluid	3.8 - 4.0

### DEEPER GROUT POURS

Where grout gap depth is in excess of 125 mm up to 500 mm, Conbextra Deep Pour should be used.

### MAXIMUM FLOW DISTANCE (MM) AT 20°C

Grout consistency	Gap depth mm	100 mm head	250 mm head
<b>Flowable:</b>	10	360	1200
	20	950	2600
	30	1500	3000
	40	2200	3000+
	50	3000	3000+
<b>Fluid:</b>	10	900	2500
	20	1900	3000
	30	3000	3000+
	40	3000+	3000+

### PLACING

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

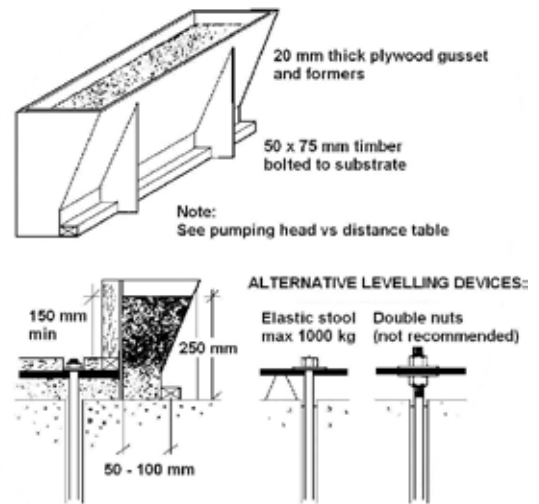
Conbextra HF can be placed in thicknesses up to 125 mm in a single pour.

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

Continuous grout flow is essential.

**Figure 1: Typical hopper system**

**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.

### 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 2.5 mm. 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 curing membrane, continuous application of water and/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.

## ESTIMATING

### SUPPLY

Conbextra HF is supplied in 20 kg moisture resistant bags.

### YIELD

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

### STORAGE

Conbextra HF 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.

## ADDITIONAL INFORMATION

Parchem provides a wide range of complementary products which include:

- concrete repair – cementitious and epoxy
- grouts and anchors – cementitious and epoxy
- waterproofing membranes – liquid applied, cementitious and bituminous sheet membranes
- waterstops – pvc and swellable
- joint sealants – building, civil and chemical resistant
- industrial flooring systems – cementitious and epoxy
- architectural coatings
- filler boards – swellable cork, bituminous and backing rod
- ancillary products

For further information on any of the above, please consult with your local Parchem sales office.

## IMPORTANT NOTICE

A Material Safety Data Sheet (MSDS) and Technical Data Sheet (TDS) are available from the Parchem website or upon request from the nearest Parchem sales office. Read the MSDS 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.

\*Manufactured and sold under license from Fosroc International Limited. Fosroc and the Fosroc logo are trade marks of Fosroc International Limited, used under license. \*Denotes a trade mark of Fosroc International Limited.