



# Conbextra® HES(L)

## Free flow, high strength, rapid setting, cementitious grout

### Uses

Conbextra HES(L) grout is used for special grouting where it is essential to have fast setting and high early strength. It can also be used for grouting/fixing glass or metallic railings in concrete.

### Advantages

- Non-shrink
- Quick setting
- No metallic ion content to cause staining
- Develops high early strength without the use of chlorides
- Free flow ensures high level of contact with load bearing area
- Pre-packed material overcomes onsite batching variations

### Description

Conbextra HES(L) grout is supplied as a ready to use dry powder. The addition of a controlled amount of clean water produces a free flowing, non-shrink grout for gap thicknesses up to 50mm.

Conbextra HES(L) grout is a blend of Portland cement, graded fillers and chemical additives which impart non shrink property whilst minimising water demand. The formulation ensures high early strength. The graded filler is designed to assist uniform mixing and produce a consistent grout.

### Technical support

An experienced technical advisory team is available to give technical service on request.

### Properties

Initial Setting time at 26°C is around 25 mins.

#### Compressive strength : (BS 1881:PART 116)

Age (days)	Compressive strength (N/mm <sup>2</sup> )
	Pourable consistency ( W/P 0.21)
6 hr	15
24 hr	20
7 days	30
28 days	50

Age (days)	Flexural strength ( BS 4551)(N/mm <sup>2</sup> )	Tensile strength (N/mm <sup>2</sup> )
1	4.05	1.2
3	4.20	1.8
7	4.60	3.0
28	5.00	4.0

<b>Pullout bond strength (W/P 0.21)</b>	17N/mm <sup>2</sup> @ 7 days 20N/mm <sup>2</sup> @ 28 days
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<b>Unrestrained expansion</b>	Upto 2% in the plastic state enables to overcome shrinkage.
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<b>Pressure to restrain : plastic expansion</b>	0.004 N/mm <sup>2</sup> approx.
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### Application instructions

#### Surface 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 laitence, it must be cut back to a sound base. Bolt holes and fixing pockets must be blown clean of any dirt or debris.

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## Pre-soaking

Several hours prior to placing, the concrete substrates should be saturated with fresh water.

Immediately before grouting takes place any free water should be removed with particular care being taken to blow out all bolt holes and pockets.

## Formwork

The formwork should be constructed to be leakproof. This can be achieved by using foam rubber strip or mastic sealant 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 pre-soaking.

## Unrestrained surface area

This 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. It is advisable, where practical, to have no gap at the flank sides.

## Mixing and placing

### Mixing

For best results slow speed heavy duty ( 400-500 rpm) mixing equipment should be used with a proper mixing paddle. However for more than 25kgs mixing, normal diesel/power operated concrete mixer can be used with sufficient mixing time of 3-5 minutes.

To enable the grouting operation to be carried out continuously, it is essential that sufficient mixing capacity and labour are available. The use of a grout holding tank with provision to gently agitate the grout may be required.

## Consistency of grout mix

The quantity of clean water required to be added per bag to achieve the desired consistency is as per mentioned water powder ratio.

The selected water content should be accurately measured into the mixer. The total content of the Conbextra HES(L) grout bag should be slowly added and continuous mixing should take place for 5 minutes. This will ensure that the grout has a smooth even consistency.

## Placing

At 30°C place the grout within 10 minutes of mixing.

Conbextra HES(L) grout can be placed in thicknesses up to 50mm in a single pour.

For thicker sections it is necessary to fill out Conbextra HES(L) grout with well graded silt free aggregate to minimise heat build up. Typically a 5 - 10mm aggregate is suitable. 50 - 100% aggregate weight of Conbextra HES(L) grout can be added depending on the thickness to be applied.

Continuous grout flow is essential. Sufficient grout must be prepared before starting. The time taken to pour a batch must be regulated to the time to prepare the next one.

The uniformly mixed grout should be placed using a suitable grout pump for faster application.

## Curing

On completion of the grouting operation, the grout should be left for air drying. However membrane curing agent or polythene sheet may be used to give an early surface protection from precipitation. But never cure the grout with water.

## Cleaning

Conbextra HES(L) grout should be removed from tools and equipment with clean water immediately after use. Cured material can be removed mechanically, or with Reebaklens.



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## Limitations

### Low temperature working

When the air or contact surface temperatures are 10°C or below on a falling thermometer, the strength development may be slow.

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

### High temperature working

At ambient temperatures above 35° C, cool water ( below 20°C) should be used for mixing the grout prior to placement. Otherwise the pot life of the mixed material will be reduced.

## Estimating

### Packaging

Conbextra HES(L) grout is supplied in 15 kg. moisture resistant bags.

### Yield

Allowance should be made for wastage when estimating quantities required. The approximate yield per 15 kg bag is 8.3 litres ( for pourable consistency).

## Storage

### Shelf life

Conbextra HES(L) grout has a shelf life of 6 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.

## Precautions

### Health and Safety instructions

Conbextra HES(L) grout is alkaline and should not come into contact with skin and eyes. Inhalation of dust should be avoided during mixing. Gloves, goggles and dust mask should be worn.

If contact with skin occurs, washing water is suggested.. Splashes to eyes should be washed immediately with plenty of clean water and medical advice sought.

### Additional information

For further details about the use and selection of grouts refer to the Fosroc Information module entitled ' Precision grouting in the Construction industry'.



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## Important note :

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