Conbextra HR

FOSROC constructive solutions

Heat resistant, high strength, nonshrink, free flow, cementitious Grout

Uses

Conbextra HR is used for grouting of equipment like blast furnace, chimneys, etc., and also for concrete floor refurbishments, where high temperature and thermal gradients are envisaged.

Advantages

- Expansion system compensates for shrinkage in the plastic state
- No iron content to cause staining
- Prepacked material overcomes onsite batching variations
- Develops high strength
- Free flow ensures high level of contact with the load bearing area
- Thermal resistance property ensures effective functioning even at high temperatures upto 500^{0}C and thermal gradients

Description

Conbextra HR 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 applications in high temperature zones.

Conbextra HR is a blend of Portland cement, graded fillers and chemical additives which impart controlled expansion, while minimising water demand. The product is designed to provide resistance to high temperatures upto 500^{0}C without losing its performance characteristics.

Technical Support

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

Properties

Compressive strength (IS : 4031 Part 6) (W/P=0.14)

Age (days)	Compressive Strength (N/mm^2)
1	35
3	60
7	70
28	90

Flexural strength (BS 4551, 1980)	-	9 N/mm^2 @ 28 days
Tensile strength	-	3.5 N/mm^2 @ 28 days
Free Expansion	-	1-2%
Density	-	2250-2350 Kg/m^3

* Normally 25 - 30% decrease in mechanical properties will be noticed after exposure to 500^{0}C.

Note : The typical physical properties given above are derived from testing in a controlled laboratory environment. Results derived from testing of field-applied samples may vary, depending on actual site conditions.

Specification Clauses

Performance specification

All grouting must be carried out with a pre packed cement based product which is chloride free.

It shall be mixed with clean water to the required consistency. The grout must not bleed or segregate.

A positive volumetric expansion shall occur while the grout is plastic by means of gaseous system.

The ultimate compressive strength of the grout must exceed 50 N/mm^2 at 28 days after 15 cycles of exposure to 500^{0}C.

The storage handling and placement of the grout must be in strict accordance with the manufacturer's instructions.

The grout shall be capable of resisting high temperatures upto 500^{0}C and thermal gradients.

Application instructions

Preparation

Foundation surface

The substrate surface must be free from oil, grease or any loosely adherent materials. If the concrete surface is defective or has laitance, it must be cut back to a sound base. Bolt holes and fixing pockets must be blown clean of any dirt or debris. Immediately before grouting takes place any free water should be removed with particular care being taken to blow out all bolt holes and pockets.

Base plate

It is essential that this is clean and free from oil, grease, rust or scale. 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.

Form work

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.

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Unrestricted surface area

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

Mixing and placing

Mixing

For best results a mechanically powered grout mixer should be used. When quantities upto 50 kg are used, a slow speed drill fitted with a high shear mixer is suitable. Larger quantities will require a high shear vane mixer. Do not use a colloidal impeller mixer.

Consistency of grout mix

The quantity of clean water required to be added to a 25 kg bag to achieve the desired consistency is 3.5 - 4.0 litres.

The selected water content should be accurately measured into the mixer. The total content of the Conbextra HR bag should be slowly added and consistency.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.

Placing

At 30^{0}C place the grout within 20 minutes of mixing to gain full benefit of the expansion process.

Conbextra HR can be placed in thicknesses of upto 100mm in a single pour when used as an underplate grout.

For grouting sections, exceeding 100mm thick Conbextra HR shall be added with special coarse aggregate. Please contact local Fosroc office.

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

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.

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 HR should be removed from tools and equipment with clean water immediately after use. Cured material can be removed mechanically, or with Reebaklens.

Limitations

Low temperature working

When the air or contact surface temperatures are 10^{0}C or below on a falling thermometer, warm water (30-40^{0}C) is recommended to accelerate strength development. For ambient temperature below 10^{0}C the formwork should be kept 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 40^{0}C, cool water (below 20^{0}C) should be used for mixing the grout prior to placement.

Estimating

Packaging

Conbextra HR is supplied in 25 Kg moisture resistant bags.

Yield

Allowance should be made for wastage when estimating quantities required. The yield per bag depends on the quantity of water added. The approximate yield per 25 Kg bag @ W/p = 0.14 is 12 Ltrs.

Storage

Shelf life

Conbextra HR has a shelf life of 6 months if kept in a dry store in sealed bags. If stored in high temperature and high humidity, the shelf life may be reduced.

Precautions

Health and Safety instructions

Conbextra HR is alkaline and should not come into contact with skin and eyes. Avoid inhalation of dust during mixing.

Gloves, goggles and dust mask should be worn.If contact with skin occurs, wash with water. Splashes on eyes should be washed immediately with plenty of clean water and medical advice sought.

Fire

Conbextra HR is non-flammable.

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Additional information

Fosroc manufactures a wide range of products specifically designed for the repair and refurbishment of damaged reinforced concrete. This includes repair mortars, fluid microconcretes, chemical resistant epoxy mortars in addition to comprehensive package of protective coatings. In addition, a wide range of complementary products are available. This includes joint sealants, waterproofing membranes, grouts and anchors and specialised flooring materials.

*Separate data sheets are available on these products.

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