

# CEMGROUT HR

**HEAT RESISTANT, HIGH STRENGTH, NON-SHRINK, FREE FLOW CEMENTITIOUS GROUT**

## Description

CEMGROUT 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.

CEMGROUT HR is a blend of Portland cement, graded fillers and chemical additives which impart controlled expansion, while minimizing water demand. The product is designed to provide resistance to high temperatures up to 500°C without losing its performance characteristics.

## Uses

- Blast furnace grouting
- Chimney grouting
- Flooring around furnace

## Advantages

- Effective in functioning around 500°C
- Easy to use (ready to mix powder)
- Easy to mix, only add water
- Adjustable consistency
- Very good flow characteristics
- Rapid strength development
- High final strengths
- Expands by gas generation whilst in the plastic state of curing
- Impact and vibration resistant
- Non-corrosive
- Not flammable, non-toxic

## Characteristic

Appearance : Free flow grey powder

W / P Ratio, by weight : 0.14 - 0.16(flowable)

Mix Density (Flowable) : 2300 - 2400 Kg/m<sup>3</sup>

Compressive strength (IS4031, Part 6) :

- 1 Day(30°C Air curing) : > 25 Mpa
- 3 Days(30°C) : > 45 MPa
- 7 Days(30°C) : > 55 MPa
- 28 Days(30°C) : > 65 MPa
- Flexural Strength(ASTM C78) 28 Days : > 7 Mpa
- Free linear Expansion(ASTM C827) : 1-2%
- Tensile Strength, N/mm<sup>2</sup> : > 3 Mpa

Normally 25-30% decrease in mechanical properties will be noticed after exposure to 500°C

## Expansion Characteristic

Controlled expansion occurs in the unset material to ensure that the grout, when cured, will continue to occupy its original volume within the confines of the voids in which it has placed.

Unrestrained expansion : 1 to 2%

Time of expansion: Starts: 20 minutes Finish: 150 minutes

Pressure to restrain: Approx. 0.004 N/mm<sup>2</sup> plastic expansion

Note : It is necessary to restrain free flow grout edges over 50mm wide. Otherwise unrestrained expansion may lead to some cracks.

## Standard Compliance

CEMGROUT HR complies with U.S. Corps of Engineers Specifications CRD - C588-79 and CRD - C621 in term of workability. ASTM C1107, Grade A.

## Surface Preparation

All areas to be grouted must be clean and free of oil, grease, dirt and contaminants. Remove all loose materials. Concrete must be fully cured a minimum of 28 days. Where required, provide air- relief openings to avoid entrapment of air.

All metal components to be in contact with CEMGROUT HR must be free of rust, paint, or oils.

All concrete to come in contact with the grout must be thoroughly saturated with clean water for a minimum of 12 hours before placement of grout. Remove excess water from holes and voids just before grout placement.

## Pre-soaking

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

## Base plate

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

## Formwork

The formwork should be constructed to be leak proof. 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 flanksides.

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## Mixing

Precondition CEMGROUT HR to  $27 \pm 3^\circ\text{C}$  before mixing. CEMGROUT HR is ready to use and requires only the addition of water. Use the minimum water required to achieve the desired placement consistency, approximately the following amounts

For Flowable Mix - 3.5 - 4 ltr. Water to 30 kg.

For Plastic Mix - 2.75 - 3.5 ltr. Water to 30 kg.

The water requirement may vary with mixing efficiency, temperature, and other variables. It is advisable to carry out a trial mix to access any adjustment necessary in the water demand before commencing large scale application.

Mechanical mixing is a must. For a large batch, use a concrete mixer and for a small batch (up to two bags at a time), use a heavy-duty, slow speed (approx. 600 rpm) drill fitted with a spiral paddle.

Place approximately 80% of the water in the mixer.

Keeping the mixer running, add CEMGROUT HR slowly.

Mix for at least 3 minutes until a lump-free mixture is obtained. Add the remaining water while continuing to mix for at least 5 minutes until the desired consistency is achieved. Use 7-9 mm screen, to remove any unmixed lumps.

## Placing

At  $30^\circ\text{C}$  place the grout within 20 minutes of mixing to gain full benefit of the expansion process. CEMGROUT HR can be placed in thicknesses of up to 100mm in a single pour when used as an under plate grout.

For grouting sections, exceeding 100mm thick CEMGROUT HR shall be added with special coarse aggregate.

Please contact local FIRST CHOICE SPECIALITY CHEMICALS PVT. LTD.

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.

## Coverage

2000-2075 Kg. of CEMGROUT HES/m<sup>3</sup>

## Packing

30 kg HDPE bag.

## Curing

On completion of the grouting operation, exposed areas should be thoroughly cured. This should be done by the use of Con core curing membrane, continuous application of water and/or wet hessian.

## Cleaning of Tools

Clean all tools and application equipment with water immediately

## Note

All Technical Data Sheets are updated on regular basis; it is the user's responsibility, to obtain the most recent issue.

Field services where provided, does not constitute supervisory responsibility, for additional information contact our local FIRSTCHOICE SPECIALITY CHEMICALS representative.

## Disclaimer

Whilst any information contained herein is true, accurate and represents our best knowledge and experience, no warranty is given or implied with any recommendations made by us, our representatives or distributors, as the conditions of use and the competence of any labor involved in the application are beyond our control.

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