Gripcem™

Single component cementitious anchoring system

The Construction Alchemists

Description

Gripcem™ is a ready to use dry powder which requires only the addition of water to produce a free-flowing, non-shrink anchor grout. This formulation is made from specially processed cement, pregraded fillers and additives which impart :

- Good initial and ultimate strengths due to very low water requirement
- Controlled expansion to retain the original volume filled even after setting
- Free flow characteristics without any segregation and bleeding.

Gripcem™, on setting will have a micro-cellular structure with high frost, fire and oil resistance.

Features & Benefits

- Dual shrinkage compensated - volume remains same in the plastic as well as hardened state hence there is no gap left unfilled in the hardened state, aiding maximum contact with the load transferring surface.
- Self-levelling - helps complete filling without voids which ensures maximum contact with load bearing area..
- No need for external aids like vibrating, rodding, poking, chaining etc.
- Stability - It's a pre-packed and factory controlled grout which gives consistency and reliability batch on batch.
- Eliminates bleeding and segregation at site
- Resistant to chemicals. extremes of heat, harsh natural exposure

Primary Application

Gripcem™ is used for effective support beneath load bearing units especially where static loads apply. Also as an efficient medium for transferring all operational loads to the foundation.

For free flow grouting of machine base plates, crane and transporter rails, standing equipment bed plates, stanchion bases, steel rolling mill beds, pump sets etc.

Technical properties

Compressive Strength

Age (days)	24 hrs	3 days	7 days	28 days
Compressive Strength (MPa)	10	27	35	45

Young's Modulus : 24kN/mm²

Expansion Characteristics : 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 been placed.

Unrestrained Expansion : 1-4%

Time of expansion

Initial	Final
20mins	150mins

Pressure to restrain plastic expansion : ≈0.004MPa

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

Freshwet density of wet grout : ≈ 2220kg/m³ at flowable consistency

Water powder ratio:

Consistency	W/P	Water required per 25kg bag
Flowable	0.15	3.75ltrs

Flow characteristics: The maximum distance of fl ow is governed by the gap width and the head of the grout. Typical data for flow design, assuming grout is poured immediately after mixing, is given in the table below

Max. flow distance in mm

Grout Consistency	Gap width (mm)	50mm head	100mm head	250mm head
Flowable	30	500	1000	2000
	50	1000	2000	3000+

N.B: This table is based on the following factors: Temperature : 25°C : Water saturated substrate; Minimum unrestricted flow width : 300mm

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Specification Clauses

Performance Specification

All grouting (specify details and areas of application) must be carried out with a prepackaged cement based product which shall be mixed with water on site at water powder ratio of 0.15. The grout must not bleed or segregate, must be iron free and chloride free. Expansion of 1 - 4% shall occur while the grout is plastic. The compressive strength of the grout must exceed 30 MPa at 7 days and 40 MPa at 28 days. The grout must be stored, handled and placed strictly in accordance with the manufacturer's instructions.
Supplier specification : All grouting (specify details and areas of application) must be carried out using Gripcem™ grout manufactured by Talrak, applied strictly in accordance with the manufacturer's application manual.

Application Instruction

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 and fixing pockets must be blown clean of any dirt or debris.

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 Plates

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.

Leveling 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. 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 a mechanically powered grout mixer should be used. When quantities up to 50kg 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.
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 to a 25kg bag to achieve the desired consistency is given below:

Flowable : 3.75 litres

The selected water content should be accurately measured into the mixer. The total content of the Gripcem™ 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 20 minutes of mixing to gain full benefit of the expansion process.

Gripcem™ can be placed in thicknesses up to 100mm in a single pour when used as an underplate grout.

For thicker sections it is necessary to fill out Gripcem™ grout with well graded silt free aggregate to minimize heat build up. Typically a 10mm aggregate is suitable. 50 - 100% aggregate by weight of Gripcem™ can be added.

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.

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Typical hopper system

Removable hopper : For large pours the grout may be hand placed or pumped into a removable hopper (trough). Pouring should be from one side of the void to eliminate any air or pre-soaked water becoming trapped under the base plate. It is advisable to pour 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.

Where large volumes have to be placed Gripcem™ grout may be pumped. A heavy duty diaphragm pump is recommended for this purpose. Screw feed and piston pumps may also be suitable.

Curing

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

Cleaning

Gripcem™ grout should be removed from tools and equipment with clean water immediately after use. Cured material can be removed mechanically, or with Talrak recommended cleaning agents.

Estimating
Packaging

Gripcem™ is supplied in 25 Kg HDPE bags.

Yield

One bag of Gripcem™ will yield 13.5ltrs of mixed material at flowable consistency.

Storage

Gripcem™ has a shelf life of 6 months if kept in dry store in original, unopened bag. If stored at high temperature and/or high humidity conditions the shelf life may be reduced.

Precautions
Health & Safety Instructions

Gripcem™ is alkaline and should not come in contact with skin or eye. Inhalation of dust during mixing should be avoided. However it should never be ingested and if it comes into contact with eyes, wash immediately with plenty of water and seek medical treatment. Gloves, goggles and protective clothing should be worn.

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