Concrete Works
Construction Chemicals
Private Limited

CWC® SMARTCEM V1

Non-Shrink, High - Strength, Free Flow Cementitious grout

Description

SAMARTCEM V1 is Non shrink cementitious dry mix powder used as free flow grouts. It is a blend of Portland cement, graded fillers and chemical additives which impart controlled expansion in the plastic state whilst minimizing water demand. The low water demand ensures high early strength. The graded fillers are designed to assist uniform mixing and produce a consistent grout. The material is based on cement, graded aggregate fillers and additives which imparts controlled expansion of mortar and reduces water demand, thus ensuring positive contact with machine base plate, high early strength, and long-term durability with all types of structure.

Advantages:

- Gaseous expansion system compensates for shrinkage and settlement in the plastic state
- No metallic iron content to cause staining
- Pre-packed material overcomes onsite batching variations
- Develops high early strength without the use of chlorides
- High ultimate strength ensures the durability of the hardened grout
- Free flow ensures high level of contact with load bearing area

Domains of application

- To grout bearings, machine foundations, columns joint in precast construction etc.
- To grout anchors in concrete
- To grout cavities, gaps, and voids in concrete
- To grout base plate of turbine, compressor, boilers, pumps, and heavy machinery.
- Sealing around penetrations ▪ Post fixings

Standard Compliance

SMARTCEM V1 conforms to ASTM C1107 (Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink).

Technical Properties

Appearance / Colour	Grey Powder		
Compressive Strength (N/mm^2) at 27^{o}C, as per IS 4031			
Age (Days)	Dry Pack (W/P=0.1 4)	Pourable (W/P = 0.15)	Flowable (W/P=0.17)
1D	30	27	20
3D	55	50	40
7D	70	63	55
28D	77	70	65
Compressive strength with addition of aggregates (N/mm^2) at 27^{o}C, as per IS 4031			
Age (Days)	**50%**	**75%**	**100%**
1D	25	32	34
3D	50	54	56
7D	60	63	65
28D	70	75	77
Flexural Strength, 28 days, N/mm^2, W/P=0.18 (BS 4551, 1998)	10.0		
Tensile Strength, 28 days, N/mm^2, W/P=0.18	3.5		
Pullout bond strength (W/P - 0.18)			
7D	18		
28D	21		
Time for expansion (after mixing)	Start : 20 mins		
	Finish :120mins		
Fresh wet density (kg/m^3)	2200 - 2300		
Dynamic load resistance	Specimens of SMAARTCEM V1 remained undamaged even after subjecting them to alternate loads of 5N/mm^2 & 25N/mm^2 at the rate of 500 cycles / minute for two million cycles.		
Young's modulus (ASTM D469 - 94)	28 kN/mm^2		
Unrestrained expansion	2 - 4 % in the plastic state enables to overcome shrinkage		
Pressure to restrain	0.004 N/mm^2 approx.		

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

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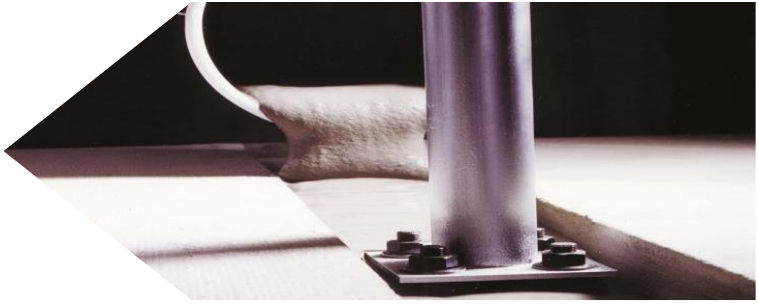

Application instructions

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 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.

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 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

SMARTCEM V1 can be mixed with a low speed (< 500 rpm) hand drill mixer to avoid entraining too much air. Mix only full bags for best results. Pour around 80 to 90% of the recommended water in a suitable mixing container. While stirring slowly, add the powder to the water and mix thoroughly at least for 3 minutes adding balance water within the mixing time to the maximum specified amount to adjust the grout to the required consistency and flow properties. Do not mix more grout, which cannot be used within pot life. Do not add extra water.

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:
Pourable : 4.00 - 4.125 litres
Flowable : 4.25 - 4.5 litres
The selected water content should be accurately measured into the mixer. The total content of the SMARTCEM V1 bag should be slowly added, and continuous mixing should take place for minutes. This will ensure that the grout has a smooth even consistency.

APPLICATION

Remove excess water from substrate surface e.g. with clean sponge, until surface is dark matt in appearance without glistening (saturated surface dry). Surface pores and pits shall not contain water. Let the grout stand for ~5 minutes to release air entrained by mixing. Pour grout immediately after mixing into the prepared openings using a sufficient pressure head to maintain a continuous flow of grout. Ensure air displaced by the grout can easily escape, otherwise entrapped air will prevent full contact grouting. For optimum use of the expansion properties apply the grout as quickly as possible, within ~15 minutes after mixing.

CURING TREATMENT

Keep visible exposed grout surfaces to a minimum. Protect the fresh material from premature drying using appropriate curing method e.g. curing compound, moist textile membrane, polythene sheet etc. CLEANING OF TOOLS Clean all tools and application equipment with water immediately after use. Hardened/cured material can only be mechanically removed.

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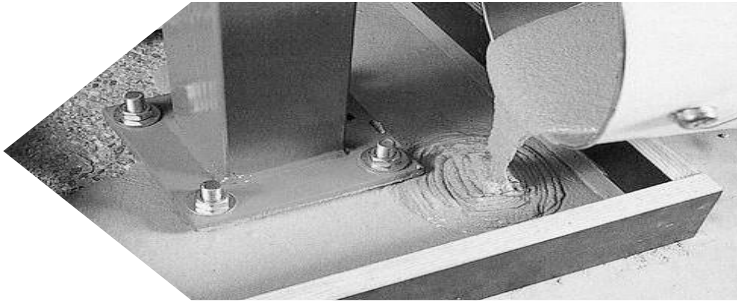

Estimating

Packaging

- SMARTCEM V1 is supplied in 25 kg moisture resistant bags.

Yield

Allowance should be made for wastage when estimating quantities required. The approximate yield per 25 kg bag for different consistency is :

Consistency	Pourable	Flowable
Yield (litres)	12.5	13.5

Shelf Life: If stored in unopened containers at normal ambient temperatures, a shelf-life of approximately 6 months. If stored in high temperature and high humidity locations, the shelf life may be reduced

Precautions

SMARTCEM V1 is alkaline and should not come into contact with skin and eyes. Inhalation of dust during mixing should be avoided.
Gloves, goggles, and dust mask should be worn.
If contact with skin occurs, it shall be washed with water.
Splashes to eyes should be washed immediately with plenty of clean water and medical advice sought.

Safety

Before use, refer to the Material Safety Data Sheet.
The MSDS is available on www.cwcchemicals.com

Additional information

The CWC range of associated products include high strength cementitious, epoxy grout, polyester resin-based mortar, Resin anchoring systems. Also available a range of products for use in construction; viz., admixtures, curing compounds, release agents, flooring systems and repair mortars.

Separate datasheets are available on these products
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