Concrete Works
Construction Chemicals
Private Limited

An ISO 9001 - 2015 Certified

CWC® SMARTCEM MC60

High Strength Single component, flowable micro concrete for concrete repairs

Description

SMARTCEM MC60 is supplied as a ready to use blend of dry powders which requires only the site addition of clean water to produce a free-flowing non-shrink repair micro concrete. The material is based on Portland cements, graded aggregates and fillers, and additives which impart controlled expansion characteristics in the plastic state, while minimizing water demand.
The low water requirement ensures high early strength and long-term durability.

SMARTCEM MC60 can be applied in section up to 100 mm thickness. It is suitable to apply by trowel, knife, hand or pump. More Layer thickness can be achieved in repeated layers. It is used as a premixed mortar for concrete repairs and structural strengthening. For larger repairs, the mixed SMARTCEM MC60 may be modified by the addition of 5mm to 12mm clean, graded, saturated surface dry aggregates at site.

Advantages:

- Dual shrinkage compensated - Volume stable in wet and hardened state reducing cracking tendency
- No metallic iron content to cause staining
- No bonding agent required - Simple installation
- Pre-packed material overcomes onsite batching variations
- No vibration - Fluidity to allow for placement without vibration.
- 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 MC60conforms to ASTM C1107 (Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink).

Technical Properties

Appearance /Colour	Free Flowing Grey Powder		
Compressive Strength (N/mm2) at 27°C, as per IS 4031	**1D**	**7D**	**28D**
	> 15	> 45	> 60
Flexural Strength, 28 days, N/mm², W/P=0.16 (BS 4551, 1998, ASTM C 348)	10.0		
Tensile Strength, 28 days, N/mm², W/P=0.16	2		
Fresh wet density (kg/m³)	2300-2450		
Material required for 1m³ Volume of Grout, kg	1950-2150		
Young's modulus (ASTM D469 - 94)	25 kN/mm2		
Coefficient of thermal expansion	10 - 12 x 10-6 / 0C.		
28 days Comp. Strength, Blended with 50% 10mm aggregate	>63 N/mm2 (Typical) at 27°C		
Free linear Expansion, ASTM C 827	0-2%		

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

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Application instructions

Preparation Foundation surface

The unrestrained surface area of the repair must be kept to a minimum. The formwork should include drainage outlets for pre-soaking and, if beneath a soffit, provision for air venting.
Provision must also be made for suitable access points to pour or pump the mixed micro-concrete in place.

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.
Defective concrete surfaces must be cut back to a sound base. Smooth surfaces should be mechanically roughened. Corroded reinforcing steel should be exposed around its full circumference and cleaned to remove all loose scale and corrosion deposits. It is important to clean the steel to a bright condition. Grit-blasting is recommended.
One coat of Nitozinc Primer should be applied on the reinforcing steel. If any discontinuity in the applied film is noticed, one more coat must be applied.
Several hours prior to placing, the concrete substrates should be saturated with clean water. Immediately prior to placing, any free water should be removed.
Note : For repair sections generally deeper than 100mm it may be necessary to mix the SMARTCEM MC60 with properly graded 5mm to 12mm silt-free aggregate to minimize temperature rise. The quantity of aggregate required may vary depending on the nature and configuration of the repair location. However, it can add between 50-100% by weight of micro concrete.

MIXING

Care should be taken to ensure that SMARTCEM MC60 is thoroughly mixed in a forced-action mixer of adequate capacity. Alternatively, mix in a suitably sized drum with a high torque (400/500 rpm) rotary drill fitted with a mixing paddle. It is essential that machine mixing capacity and labour availability is adequate to enable the placing operation to be carried out continuously. The quantity water required will generally be between 3.50 litres and 3.75 litres per 25 kg bag of SMARTCEM MC60.

The optimum water content should be determined and accurately measured into the mixer. However, it should not exceed 3.75 litres/25 kg in any case. With the mixer running, slowly empty SMARTCEM MC60 bag into the mixer. Mix continuously for 5 minutes, ensuring a smooth even consistency of the mix. Where the addition of graded coarse aggregate has been specified it should be added after the water and SMARTCEM MC60 are properly mixed. Mixing should then continue for a further 1 minute to ensure proper dispersion.

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:
For Flowable Mix: 3.50 – 4.50kg of water to 25 kg of SMARTCEM MC60 (W/P Ratio : 0.14 to 0.18)
For Plastic Mix: 3.00 – 3.75kg of water to 25 kg of SMARTCEM MC60 (W/P Ratio : 0.12 to 0.15)

The selected water content should be accurately measured into the mixer. The total content of the SMARTCEM MC60 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.

Estimating

Packaging

- SMARTCEM MC60 is supplied in 25 kg moisture resistant bags.

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 MC60 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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