

REPCON HF

HI-FLOW MICROCONCRETE



REPCON HF is a free-flowing micro-concrete used in the repairs of damaged concrete structures where reinforcement is heavily congested, access to place trowel applied mortar is limited, and where vibration of the placed material is difficult or impossible. It is a ready to used blend of dry powders requiring only the addition of clean, potable water at site. It is composed of Portland cement, graded aggregates and additives, which impart controlled expansion in both the plastic and hardened states while minimizing water demand. The low water Powder ratio ensures high early strength, water impermeability and long term durability of the structure.

FEATURES & BENEFITS

- Single component material ready to use with only the addition of water at site.
- Can be pumped or poured into the restricted locations.
- Self-compacting in nature, which eliminates the need for compaction & vibration.
- Dual expansion system compensates for shrinkage in plastic and hardened states.
- Expansion system - does not generate hydrogen.
- Has high strength and low permeability making it suitable for use in areas where excellent chloride and carbon-dioxide resistance is required.
- Contains no chloride admixtures.
- Contains low alkali minimizing the risk of alkali-slica reactions.
- Full encapsulation of the heavily congested steel is achievable.

BASIC USES

- Bridge Structures
- Columns, walls and beams.
- Dams.
- Retaining Walls.
- Parking Decks, Floor toppings joint repairs.
- Equipment bases, pedestals etc.,
- All areas where reinforcement is heavily congested and access to place trowel applied mortar is limited.
- Large volume concrete repairs.

TECHNICAL INFORMATION

Typical Engineering Data

Compressive Strength	
50 mm cubes ASTM C - 109	
Age	
3 days	Strength 5000 psi (34 MPa)
7 days	7000 psi (48 MPa)
14 days	8000 psi (55 MPa)

Flow rate: ASTM C 939 & CRD C - 621
120% Flow

Expansion

Tested in accordance with ASTM C 827 and positive expansion is observed.

Tested in accordance with CRD C - 621

3 days	0.01%
7 days	0.06%
14 days	0.06%
28 days	0.06%

Flexural Strength:

ASTM C 78	
3 days	5.4 MPa
7 days	5.8 MPa
1 days	8.3 MPa
28 days	11 MPa

Setting Time:

ASTM C 191	
Initial Set	3 hrs 5 mins.
Final Set	4 hrs 47 mins.

Young's Modulus: 29 KN/mm²

Pressure to restrain plastic expansion: approx 0.004 N/mm.

DIRECTIONS FOR USE

Surface Preparation: The concrete must be clean and rough. All oil, dirt, debris, paint and unsound concrete must be removed. The surface must be prepared mechanically using a scabber, shotblast or bush hammer, which will give a surface profile of a minimum 3 mm and expose the large aggregate of the concrete. The final step in cleaning should be the complete removal of all residue with a vacuum cleaner or pressure washer.

Exposed Reinforcement steel: Corroded steel reinforcement should be exposed around its full circumference and cleaned to remove all loose scale to a bright condition. Grit blasting is recommended.

COVERAGE	When mixed with 4.5 liter of water, one bag of REPCON HF yields approximately 0.014 m ³ of fluid grout. The above RECON HF mixed grout can be extended to yield approx. 0.018 m ³ of flowable grout by the addition of approx. 11.3 kg of 9.5 mm pea gravel.
PACKAGING	REPCON HF is packed in 25 kg bags
COLOR	Contact CMCI Tech Dept.

If the steel reinforcement has corroded more than 25% of its area, then additional reinforcement has to be provided in consultation with a structural engineer.

Formwork: Determine the repair schedule and method of placing REPCON HF, then prepare rigid and tight formwork to prevent loss of material. The formwork should have properly sealed faces to ensure that no water is absorbed from the repair material. The formwork should include drainage outlets for presoaking and, if beneath a sofflit, provision for air venting. Care should be taken to ensure that formwork is watertight and constructed in line with normal concreting practice. The unrestrained surface of the repair should be kept to a minimum and care should be taken to ensure at least 20 mm cover to reinforcement. Suitable access points must be provided in the formwork to pour the mixed microconcrete into place.

Substrate Priming: Substrate has to be soaked in water for several hours prior to the application of REPCON HF, to minimize local absorption and to assist in the free flow of REPCON HF. Before placing REPCON HF, ensure that concrete surfaces are uniformly damp but free from standing water and seal drainage outlets. In exceptional circumstances, e.g., EPOPRIME LP epoxy adhesive should be used in consultation with the local CMCI office. If deleterious salts such as chlorides or sulphates are present in the parent concrete, EPOPRIME LP is recommended as it prevents the migration of such deleterious salts into the REPCON HF. EPOPRIME LP also aids in bonding of parent concrete & REPCON HF.

When EPOPRIME LP MV is used presoaking is not necessary but care should be taken to ensure formwork is erected and REPCON HF is placed within the tack free time of EPOPRIME LP.

Mixing: Since REPCON HF is a precision concrete, care should be taken to ensure that it is thoroughly mixed and placed as per the manufacturer's instructions. It is essential that a mechanically powered mixer be used. Damp down the inside of the mixer with water prior to mixing the initial batch of REPCON HF. Mixer should be damp but free from standing water. Machine mixing capacity and labour availability should be adequate for carrying out the placing operation continuously. Measure 4.5 liters of drinking quality water and pour three quarters into the mixer. With the machine in operation, add one full 25-kg REPCON HF and mix for one minute before adding the rest of water. Mix for a further 2 to 3 minutes until a smooth even consistency is obtained. Note that powder must always be added to water and not vice-versa.

Quality Statement

CMCI manufactures its products at their manufacturing facility in Saudi Arabia as per the Quality Procedures certified to conform with quality Management System described in ISO 9000 series

CMCI provides a comprehensive technical support system for its full range of high performance construction products CMCI also offers full technical field support to consultants, Architects, contractors, applicators and End Users.

The Technical Specification information and recommendations given are based on the current technical knowledge and the user or his representative is recommended to check the suitability of the product CMCI reserves the right to amend the technical characteristic of the product as part of ongoing research and development. As the work execution is beyond the direct and continuous control of CMCI no guaranty and or responsibility is assumed on the performance of work completion executed with use of our products.

Placing: It is essential to place the mixed material within 30 minutes of mixing in order to gain the fully benefit of fluidity and of the expansion process. Standard concrete pumping should be followed for pumping REPCONE HF. The pump and pipeline must be 'grouted' with rich cement slurry of mortar, discharging the 'grout' as waste. Pumping should be commended immediately after 'grouting' in this way. If placing this product in hot weather, use of cold water will increase the working time.

Curing: As with all cementitious products, proper curing procedures are important to ensure the durability and quality of the structure. To prevent surface cracking, cure with high solids curing compound such as KUREKOTE 75 VOX or CEMTEC KURE N SEAL. In hot, windy or direct sunlight situations, cover with polyethylene for a minimum of three (3) days. Curing compound must be ordered separately.

CLEAN-UP

REPCON HF should be removed from tools, equipment and mixers with clean water immediately after use. Cured material can only be removed mechanically. Equipment used with ZINC RICH PRIMER and curing compounds should be cleaned with CEMTEC SOLVENT before the materials harden.

HEALTH & SAFETY

- Wear suitable protective clothing, safety goggles, gloves and respiratory protective equipment to avoid inhalation and contact with eyes and skin.
- In case of contact with eyes / skin, wash with plenty of clean water and seek medical advice.
- In adverse temperatures, follow ACI recommendations for hot / cold weather concreting practices.
- Use only potable water for mixing.
- Do not use material at temperatures below 7°C.

"High Quality Construction Chemicals"
CONSTRUCTION MATERIAL CHEMICAL INDUSTRIES
P.O. Box 7137, Dammam 31462, Saudi Arabia,
Tel: 00966-13-8471450; Fax: 00966-13-8471575
Email: tech@cmci-sa.com, Web: www.cmci-sa.com