

## VARACRETE MC

### NON-SHRINK HIGH PERFORMANCE FLUID REPAIR MICROCONCRETE

#### DESCRIPTION

**VARACRETE MC** is supplied as a ready to use cement aggregate/sand mix requiring only the addition of water to produce a free flowing repair concrete.

It is a careful blend of Portland cement, graded aggregate, sand, microsilica, water reducing agents and auxiliary expansive modifying agents to compensate for shrinkage in both the plastic and the hardened states.

#### USES

**VARACRETE MC** with dual expansion characteristics has been engineered for a wide range of application.

It is formulated for free flowing in between highly congested reinforcement located in difficult to reach areas. The free flowing consistency of **VARACRETE MC** ensures its penetration into honeycombed concrete and defective deteriorated concrete filling all voids with high performance repair concrete. It is suitable for use in marine environment.

#### ADVANTAGES

- **Reliability** : Always fresh factory controlled prepacked mix, eliminates site batching variations.
- **Dual expansion** : Compensation for shrinkage in both plastic and hardened states.
- **Workability** : Fluid consistency can be pumped or poured to penetrate heavily reinforced concrete.
- **Adhesion** : Free flowing consistency ensures full surface contact with existing deteriorated concrete minimizing loss of bond between newly poured repair concrete and existing concrete.
- **Chloride free** : No chlorides are added in the mix.

- **Iron free**: No metallic iron included as this causes deterioration due to rust expansion.

#### TYPICAL PROPERTIES

- **Compressive strength** : **BS 1881** - 100mm cubes casted under restraint in N/mm<sup>2</sup> at 25° C and water powder ratio 0.130 for Flowable consistency and 0.10 for Mortar consistency.

Age (days)	Mortar consistency	Flowable consistency
1	30	18
7	58	46
28	80	60

- **Wet density**: **BS 1881** – 2250 kg/m<sup>3</sup> giving a yield of 15 litres per 30kgs bag at flowable consistency.
- **Flow properties** : At 20° C at flowable consistency to UK Dept. of Transport standard **BD 27/91** at 10 secs and water powder ratio 0.130; 750 mm minimum.
- **Flexural Strength** : @28 days 25° C 10 N/mm<sup>2</sup>
- **Setting time** : **BS 4550** at 20° C and 0.130 water to powder ratio (flowable consistency).
- **Initial set** : 6 hours 00 minutes
- **Final set** : 8 hours 15 minutes
- **Alkali content** : The presence of non-alkali reactive aggregates ensures its resistance to future expansive reactions and deterioration.
- **Bond Strength** : The typical shear bond strength when tested as per **BS-6319** at water powder ratio of 0.130 at 20° C without any bonding agent is 68 N/mm<sup>2</sup> at 28 days.

**Expansion characteristics** : An initial expansion of about 1 % when measured according to **ASTM C 827** overcomes plastic settlement in the unset material. Expansion in the hardened state when measured according to **ASTM C 1090-88** compensates for drying shrinkage.

- **Pressure to restrain plastic expansion** :  
Approximately 0.004 N/mm<sup>2</sup>.

## APPLICATION

**Planning** : Plan for surface preparation, formwork, fixing of base plate, mixing and placing equipment, manpower and quantity of **VARACRETE MC** required.

**Surface preparation**: All defective and deteriorated also damaged concrete must be identified and a deep cut with grinding or cutting disc made to limit the perimeter of the repair works. The damaged concrete must be removed to expose a sound substrate.

A suitable formwork must be installed and constructed respecting good quality concreting practice to avoid any loss of **VARACRETE MC** during the pouring operation.

**Priming**: Steel must be primed immediately after cleaning with zinc rich primer.

The repair concrete substrate should be flooded with clean water and excess removed prior to pouring **VARACRETE MC**.

It is advisable to consult **AKARSH** Technical Dept., for special recommendations covering the steel primers and concrete primers to be used in different repair works. Normally for concrete **VARABOND SBR** or **VARABOND OTN** is used depending on the situation.

**Mixing**: A mechanically powered mixer must be used to mix **VARACRETE MC** and placing operation shall be carried continuously in keeping accurate control of water introduced in each mix. Use 3.7 to 4.1 litres of water per 30kg bag.

The water is first placed in the mixer followed by gradually adding the **VARACRETE MC**. The mixing must be continued for 3 to 5 minutes after all the product has been emptied in the mixer.

**Placing**: Place **VARACRETE MC** immediately into formwork by pouring or pumping in a continuous operation taking care not to introduce entrapped air voids.

When the **VARACRETE MC** has set cure all the exposed surfaces with water or curing compounds or protect the exposed surfaces with wet burlap and hessian.

## PACKAGING

**VARACRETE MC** is available in 30 kg bags.

## PRECAUTIONS

**Limitations**: Do not work at 5° C or less. Apply at a thickness between 50 and 300 mm. Ensure that the unrestrained area of repair is kept to a minimum.

**Cleaning**: All equipment must be cleaned with water immediately after use. Mixes containing this product must not be emptied into drainage systems.

**Protection**: All works must be protected from rain, frost until fully hardened.

**Storage**: Shelf life is 12 months when stored in dry conditions at moderate temperature and humidity.

**Fire resistance**: **VARACRETE MC** is not flammable.

## PERFORMANCE STANDARDS

**VARACRETE MC** is tested using the relevant sections of

**ASTM C -1107 Grade C**

**BS – 1881**

UK Dept of Transport Standard **BD 27/91**

**BS - 4550**

**CRDC - 821 - 82 A**

**BS - 6319**

## HEALTH AND SAFETY

**VARACRETE MC** is non-toxic but mildly alkaline. Gloves should be worn during application. Splashes to the skin or eyes should be removed with clean water. In the event of prolonged irritation, seek medical advice.