tradition • innovation • quality

a.b.e.® Construction Chemicals

dura.®rep FC
Fluid Micro Concrete

SHRINKAGE COMPENSATED FLUID MICRO-CONCRETE

DESCRIPTION

dura.®rep FMC is a cement based non-shrink concrete reinstatement grout, which can be applied by pouring or pumping. The select grading of aggregates and special additives ensures that there is no segregation when pouring, that the thermal coefficient of the cured product matches that of the concrete, that the product has improved strength and is less permeable.

The product is supplied in a ready to use form requiring only the addition of a small amount of water for easy mixing to produce a fluid consistency. This can then be applied 50mm or thicker into suitable shuttered repair areas.

USES

dura.®rep FMC is particularly used for:

- Reinstatement of large sections of structural concrete with greater than 50mm thickness.
- Can be applied in excess of 250mm depending on the nature of the repair and the reinforcing.
- High fluidity required in restricted or congested reinforcing steel elements where compaction or vibration is not possible.
- Shuttered applications for large pours where trowel or hand packed applications are impractical.
- Dams, weirs, bridges, buildings and concrete structures in general.
- Potable water retaining structures.
- Silos and water cooling towers.

ADVANTAGES

- Has shrinkage control in the plastic and hardened phase.
- Exhibits excellent adhesion to concrete substrates without the use of primers.
- The high strength and low permeability provides protection against chloride and carbon dioxide corrosion.
- Alkaline nature will protect the reinforcing steel against corrosion.
- Can be pumped or poured into restricted or congested areas.
- Due to its fluid properties it eliminates honeycombing even without vibration or additional compacting.
- Ease of application only requires the addition of clean water.
- Constant quality/performance (pre-blended).
- Chloride free.
- Non-toxic.

TYPICAL PHYSICAL PROPERTIES	
Initial set (20°C)	10 hours
Final set (20°C)	15 hours
Compressive strengths – MPa ASTM C109	
1 day	16
3 days	28
28 days	58
Wet expansion	0,07%
Drying shrinkage	0,07%
Wet density	2 265 kg/m³
Water Addition	2,7 litres per 25 kg
Yield	12 litres/25 kg
Flow property	975mm per 20 sec

SURFACE PREPARATION

The substrate must be sound, firm and clean, free of oil, grease, loose particles and cement laitance, old layers of paint, or other contaminants. Square cut all edges to be repaired to a minimum depth of 10mm , perpendicular to the surface followed by the removal of all unsound material. The rest of the repair area must then be broken back to a depth in excess of 50mm. Never feather edge the product. When using compressed air for cleaning the air must be clean and oil free.

Assess the initial adhesion or the effectiveness of the degreasing by means of pull-off tests. Expose all corroded reinforcing steel and grit blast. A clean metallic finish is required ensuring that all corrosion products are removed, particularly behind the steel. The anchor pattern should be about 40 to 60 microns from peak to valley.

dura.®rep FMC is designed to be cast into and restrained by formwork This formwork should be well designed and fixed to prevent no loss of material or movement causing poor and unacceptable workmanship. Allowance should be made for the initial drainage of water and the formwork material must be non-absorbent. For easy release the formwork must be treated with **dura.®strip.**

BONDING/PRIMING

Surface saturation is carried out at least four hours prior to placing **dura.®rep FMC**. This is achieved by filling the prepared formwork with clean water and draining just prior to placing **dura.®rep FMC**. It is important that all excess water is drained with no free water remaining.

Use **epidermix 345** wet-to-dry epoxy as a primer for structural applications where the bond strength must be equal or greater than the parent material. If this option is used, the substrate must remain dry. All exposed reinforcing bars must be primed by applying **dura.®rep ZR** primer. (See relevant data sheets)

Always ensure that sufficient resources (labour, water, power) are available to provide continuous mix material.

A suitable size mixing vessel that will accommodate full bag lots using a pan mixer for forced action mixing is recommended.

For small batches a heavy duty industrial drill and spiral paddle stirrer that operates around 400 to 500 r/min can be utilised. In either event tumble type mixers are not permissible. Add approximately 2/3 of the required mixing water and while stirring, slowly add the powder and mix until lump free. Add the remainder of the water and mix for 3 to 4 minutes until the mortar is again completely homogeneous and lump free. It is recommended that the mixed **dura.®rep FMC** be passed through a suitable coarse screen to identify any unmixed material prior to placing or pumping. For small mixes with a drill and paddle the complete water addition must be used at once. Always add powder to water. The fluid mortar can now be poured into the water tight formwork.

NOTE: High-speed mixing entraps an excessive amount of air and therefore should be avoided.

COVERAGE

25 kg of **dura.®rep FMC** powder mixed with 2,7 litres of water yields approximately 12 litres.

APPLICATION

dura.®rep FMC can be pumped or poured into the formwork provided. This should be done as a continuous operation and must take place within 30 minutes of mixing. Thereafter the product characteristics will change, affecting its fluidity and expansion properties.

The pump and pipeline must be thoroughly lubricated by pumping a rich cement slurry or mortar through the system, which is then discarded and immediately followed by pumping the product. Always pour or pump from one side only to avoid air entrapment.

CLEANING

Clean tools with water before the mortar hardens. Hardened material can only be removed by mechanical means

PROTECTION ON COMPLETION

The formwork should be left in place for at least 24 hours until the compressive strength of the **dura.®rep FMC** is 10 MPa or higher. **dura.®rep FMC** should be cured as soon as the formwork is removed. First soak all exposed areas of the repair with clean water. This is followed by applying, by brush or spray, a suitable curing compound like **CHRYSO® Cure WB** or as recommended by **a.b.e.® Construction Chemicals.**

In rapid drying conditions caused by high winds or direct sunlight additional precautions should be included, like sealing with polythene sheeting. This may include damp hessian behind the sheeting to prevent moisture loss.

In cold conditions, the repaired area must be protected from freezing. For additional protection properties, **dura.®rep FMC** is fully compatible with the **dura.®cote** range of protective coatings when chloride and carbon dioxide screening is essential.

TEMPERATURE AND RELATIVE HUMIDITY

Surface and ambient temperature must be at least 5°C and rising, ideally between 20°C and 30°C.

MODEL SPECIFICATION

A cement based non-shrink concrete reinstatement grout, which can be applied by pouring or pumping.

The micro-concrete will be **dura.®rep FMC**, a shrinkage compensated, fluid micro-concrete applied in accordance with the recommendations of **a.b.e.® Construction Chemicals**, including **dura.®rep ZR** primer for steel and **epidermix 345** slow-cure wet-to-dry epoxy adhesive where necessary.

PACKAGING

dura.®rep FMC is supplied in 25 kg polyethylene lined paper bags.

HANDLING & STORAGE

This product has a shelf life of 12 months if kept in a dry cool place in the original packaging. In more extreme conditions this period might be shortened.

HEALTH & SAFETY

dura.®rep FMC is alkaline and must not be allowed contact with skin and eyes. Avoid inhalation of dust during mixing by wearing dust masks. The use of gloves, eye protection and dust masks is advised. Immediately wash with water in the event of contact with skin. Splashes into eyes should also be washed immediately with plenty of clean water and medical advice sought thereafter. If swallowed seek medical attention immediately without inducing vomiting.

IMPORTANT NOTE

This data sheet is issued as a guide to the use of the product(s) concerned. Whilst **a.b.e.® Construction Chemicals** endeavours to ensure that any advice, recommendation, specification or information is accurate and correct, the company cannot - because **a.b.e.®** has no direct or continuous control over where and how **a.b.e.®** products are applied - accept any liability either directly or indirectly arising from the use of **a.b.e.®** products, whether or not in accordance with any advice, specification, recommendation, or information given by the company.

FURTHER INFORMATION

Where other products are to be used in conjunction with this material, the relevant technical data sheets should be consulted to determine total requirements. **a.b.e.® Construction Chemicals** has a wealth of technical and practical experience built up over years in the company's pursuit of excellence in building and construction technology.

a.b.e.® is an ISO 9001:2008 registered company
PO Box 5100, Boksburg North, 1461, South Africa
Website: www.abe.co.za | Tel: +27(0) 11 306 9000
Durban | Johannesburg | Cape Town | Port Elizabeth | East London | Bloemfontein | George

a.b.e.® is a Chryso Group Company

DATE UPDATED: 17/03/16