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# dura.rep FS

## Fast Setting

### FAST SETTING EMERGENCY PATCHING MORTAR FOR CONCRETE PAVEMENTS AND STRUCTURES

#### DESCRIPTION

**dura.rep FS** is a one component, cementitious blend that sets rapidly after addition of a minimal amount of clean water. Its unique formulation ensures a durable patch repair that exhibits better properties than the concrete with improved water repelling properties.

#### USES

**dura.rep FS** is particularly useful for smaller patch type repairs to concrete offering a minimal amount of downtime to operations. This product is and can be used indoors and outdoors for a variety of highway and heavy industrial repair jobs. The product is alkaline, which provides protection to the reinforcing steel in the repair area. Consult **a.b.e.**'s technical department for larger type repairs areas. **dura.rep FS** can be used for emergency repairs to concrete and masonry in areas such as:

- Emergency repairs to potable water retaining structures
- Repairing voids and honeycombed areas
- Patch repairs to elements like, airport aprons, concrete floors, roadways, pavements and access ramps
- Also applied by gunning (wet or dry process)
- Bedding mortar for concrete planks i.e. seats at sports stadiums, suspended flooring
- Water cooling towers
- Harbour wharf repairs

#### ADVANTAGES

- Ready to use, only requires clean water to be added
- Highly compatible with and easily bonds to both concrete and masonry
- The chemical action of the product is specially formulated to be fast acting, permitting completion of repairs in hours rather than of days
- Easy to work, self-compacting at a flowable consistency
- High ultimate strength
- Economical, in some instances the product may be bulked using clean aggregate. (Consult **a.b.e.**'s technical department)
- Chloride free
- Non-shrink
- Fast curing and very rapid strength gain, can be trafficked in just 2 hours
- Increased abrasion resistance over plain rendering (4 – 6 times)
- Constant quality/performance (pre-blended).
- Non-toxic

#### SURFACE PREPARATION

The substrate must be sound, firm, clean and free of oil, grease, loose particles, cement laitance, old layers of paint or other contaminants. In severe cases chemical or steam degreasing might be required. Assess the initial adhesion or the effectiveness of the degreasing by means of pull off tests. Square cut all edges to be repaired a minimum of 15 mm deep, perpendicular to the surface followed by the removal of all unsound material to a minimum depth of 15 mm. When using compressed air for cleaning, the air must be clean and oil free. Never feather edge the product.

Expose all corroded reinforcing steel and grit blast. A clean, bright finish is required ensuring that all corrosion products are removed, particularly from behind the steel. The anchor pattern should be between 40 to 60 microns from peak to valley.

#### BONDING/PRIMING

Absorbent substrates must be thoroughly wetted to reduce suction, which causes shrinkage and will result in a loss of bond. This must be carried out at least 12 hours prior to the application of **dura.rep FS**.

Use **epidermix 116** wet to dry epoxy as a primer for structural applications (traffic or high frequency foot traffic) where the bond strength must be equal or greater than the parent material. See relevant data sheet.

Prime with **dura.bond GP** (at approximately 8 m<sup>2</sup>/L) in lighter structural repairs where structural adhesion properties are not required. The product must be applied into a tacky primed surface and not dry. See relevant data sheet.

All exposed reinforcing bars must be primed before initial rust starts by applying **dura.rep ZR primer**. See relevant data sheet.

#### MIXING

Forced action mixing is recommended for this type of product with its low water addition and fast setting properties. Only one bag batches should be mixed with a variable (slow) speed industrial drill with an approved spiral paddle.

#### TYPICAL PHYSICAL PROPERTIES

##### Compressive strengths – MPa – (ASTM C 109)

Water content	2.7 L/25 kg	
2 hours	10	
1 day	26	
3 days	35	
7 days	52	
28 days	61	
Working life	10 °C	20 °C
	40 minutes	20 minutes
Setting time	10 °C	20 °C
	60 minutes	40 minutes
Coefficient of thermal expansion	8 to 12 x 10 <sup>-6</sup> /°C	
Open to vehicle traffic	2 hours @ 20 °C	
<b>Water addition</b>		
Trowelable Consistency	2.0 to 2.4 L/25 kg	
Flowable Consistency	2.5 to 2.7 L/25 kg	
Drop table flow ASTM C230	180 - 220 mm	
Initial set ASTM C807	12 - 18 min.	
Final set ASTM C807	20 - 26 min.	

The mortar is gauged with an amount of water to match the consistency required for application. For trowelable consistency add 2.0 to 2.4 L of water per 25 kg **dura.rep FS**.

For flowable consistency add 2.5 to 2.7 L of water per 25 kg **dura.rep FS**.

Slowly add the powder to approximately 2/3 of the required water addition while mixing, preferably mechanically, and mix until lump free. Add the remainder of the water and mix for 3 minutes until the mortar is once again homogeneous. Do not mix for longer than 3 minutes and make sure that the material is placed and finished off within its working life as the product has very quick setting properties. Stiffened product must be discarded and can not be extended with the addition of water. **Do not re-temper the product.** The plastic thixotropic mortar can be applied by trowel, spatula or float.

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

#### COVERAGE

25 kg of **dura.rep FS** powder mixed with water yields approximately 12 L. Approximate fresh wet density is 2 300 kg/m<sup>3</sup>, which will vary with the consistency of the mix. Wastage and irregular surfaces will reduce the practical coverage rates.

#### APPLICATION

The substrate is required to be well dampened, with no free water on the surface.

**dura.rep FS** is used for repair and restoration of small horizontal areas and vertical surfaces, such as worn, chipped or spalled concrete. At a trowelable consistency **dura.rep FS** is applied a minimum of 15 mm up to 100 mm in thickness in a single application. The product should be well compacted into position, especially around reinforcing steel, generally using a wooden float to obtain good compaction and a dense matrix. In all cases the repair area should be restricted to 4 m<sup>2</sup> in size. **dura.rep FS** is generally finished off to profile by using a steel float to obtain a smooth, dense and tight surface. When other surface finishes or textures are required, a wooden float, brush or roller can be used. Never overwork the surface.

#### CLEANING

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

#### PROTECTION ON COMPLETION

In keeping with recommended concrete and cement based materials, **dura.rep FS** must be cured by applying a suitable curing membrane to the area as soon as the surface will not be marred. This is carried out by applying, by brush or spray, a suitable curing compound like **CHRYSO®Cure WB** or **dura.bond GP** if available 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, such as sealing the area with polythene sheeting and taping the edges down. This may include damp hessian behind the sheeting to

prevent moisture loss. Similarly in cold conditions, the repaired area must be protected from freezing.

For additional protection properties, **dura.rep FS** is fully compatible with the **abe.®cote** and **dura.cote** ranges of coatings. Take care to remove any curing compounds before attempting to overcoat. It is recommended to use **dura.bond GP** as a curing compound if it is planned to overcoat the repair area. Please consult **a.b.e.®**'s technical department for advice on these coatings.

#### 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

Quick setting cementitious repair mortar.

The repair mortar will be **dura.rep FS**, a quick-setting single-component cementitious mortar applied in accordance with the recommendations of **a.b.e.® Construction Chemicals**, including the appropriate primer. The mortar must have a minimum 28 day compressive strength of 60 MPa.

#### PACKAGING

**dura.rep FS** is supplied in 25 kg polyethylene lined paper bags.

#### HANDLING AND 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 AND SAFETY

**dura.rep FS** 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.

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