SAINT-GOBAIN

durarep FR

Fibre-Reinforced

POLYMER-MODIFIED, FIBRE-REINFORCED, CEMENT BASED MORTAR INCORPORATING MIGRATING CORROSION INHIBITOR (MCI)

DESCRIPTION

durarep FR is a polymer-modified, fibre-reinforced, cement-based mortar, which is chloride-free, ready to use, non-shrink and of a single component.

durarep FR is a Class R4 Structural Repair Mortar (EN 1504-3).

USES

- Potable water retaining structures
- Repairing voids and honeycombed areas
- 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
- Easy to work
- High ultimate strength
- Resistant to frost and thawing salt
- Chloride-free
- Non-shrink
- Good bonding to concrete
- Increased abrasion resistance over plain rendering (4 - 6 times)
- Constant quality/performance (pre-blended)
- Non-toxic

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. All edges to be repaired must be square cut to a minimum of 10 mm deep, perpendicular to the surface, followed by the removal of all unsound material. When using compressed air for cleaning, the air must be clean and oil free.

Never feather edge the product. Absorbent substrates must be thoroughly wetted, to reduce suction, which causes shrinkage, resulting in loss of bond. This must be carried out at least 12 hours prior to the application of **durarep FR**.

The substrate is required to be well dampened, with no free water on the surface. All metal to be coated must be clean, mechanically sound and dry. Expose all corroded reinforcing steel and grit blast. A clean bright fi nish is required ensuring that all corrosion products are removed, particularly behind the steel. The anchor pattern should be approximately 40 to 60 microns from peak to valley. Prime before flash rusting occurs, see data sheet **durarep ZR primer**.

PROPERTIES OF WET MATERIAL		
Compressive strengths – MPa - (ASTM C 109) (40x40x160mm prisms: EN 196-1; EN 12190; EN 1015-11)		
24 hours	16	
3 days	25	
7 days	35	
28 days	> 45	
Shear bond strengths – MPa - (ASTM C 882) – using epidermix® 344 vs plain		
(C) = compression failure mode (B) = bond failure mode	**epidermix® 344**	**Plain**
7 days	7 (B)	7 (B)
28 days	10 (C)	8 (B)

BONDING/PRIMING

Use **epidermix® 344** wet to dry epoxy as a primer for structural applications where the bond strength must be equal or greater than the parent material. All exposed reinforcing bars must be primed by applying **durarep ZR** primer (see relevant data sheets).

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MIXING

Add approximately 2/3 of the required mixing water and while stirring, preferably mechanically, 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 homogeneous and lump free. The plastic-thixotropic mortar can now be applied by trowel, spatula or fl oat. The mortar can be made up to a stiffer consistency by using less water.

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

COVERAGE

25 kg of **durarep FR** powder mixed with 4.2 litres of water yields approximately 13 litres.

APPLICATION

durarep FR is used for repair and restoration of large horizontal areas and vertical surfaces, such as worn concrete road surfaces and bridges, as well as for repairing concrete, renderings, natural and artifi cial stone, and erosion damage to sewer tunnel structures. On vertical surfaces, **durarep FR** is suitable for surface repairs, re-profi ling large breakaway at the edges (on pillars and chords). Rubber gloves should be worn because of the material's high cementitious content (alkaline). Application may be carried out in layers or applied up to 30 - 50 mm in one pass.

When striking off thick sections care should be taken in terms of timing as the material below may not have set sufficiently and due to its thixotropic properties hogging may occur (slumping) resulting in surface cracking.

CLEANING

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

PROTECTION ON COMPLETION

Like all cement based materials **durarep FR** must be cured immediately, as soon as the surface will not be marred.

This is carried out by applying, by brush or spray, a suitable curing compound like **duracure SBC** or as recommended by **a.b.e.**®

In rapid drying conditions caused by high winds or direct sunlight additional precautions should be included like sealing with polythene sheeting having the edges taped 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, **durarep FR** is fully compatible with the **duracote** range of protective 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

Polymer-modified, fibre-filled, cementitious, structural repair mortar.

The structural repair mortar will be **durarep FR**, a single component polymer-modified, fibre-filled cementitious mortar applied in accordance with the recommendations of **a.b.e.**®, including **durarep ZR primer** for steel and **epidermix**® **344** wet to dry epoxy adhesive where necessary.

durarep FR is a Class R4 Structural Repair Mortar (EN 1504-3):

1 - Determination of compressive strength, **EN 12190**	63,8 N/mm²	
2 - Chloride ion content, **EN 1015-17**	<0,01%	
3 - Measurement of bond strength by pull-off, **EN 1542**	2,4 MPa	
4 - Determination of retraction and expansion, **EN 12617-4,** Method controlled movements	Shrinkage: 2,3 MPa	
	Expansion: 2,3 MPa	
5 - Freeze-thaw cycling with icing salt immersion, **EN 13687-1**	2,1 MPa	
6 - Thermal compatibility: Thunder Shower, **EN 13687-2**	2,2 MPa	
7 - Determination of resistance to carbonation, **EN 13295**	Dk ≤ reference concrete MC(0,45)	
8 - Determination of the module of elasticity in compression, **EN 13412**	28,1 GPa	
9 - Determination of resistance of capillary absorption, **EN 13057**	0,06 kg/(m² x h^{0,5})	
10 - Determination of the coeffient of thermal expansion, **EN 1770**	15,4 µm/m °C)	
11 - Skid resistance, **EN 13036-4**	Dry	72
	Wet	45

PACKAGING

durarep FR is supplied in 25 kg polyethylene lined paper bags (Product Code: 30795).

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

durarep FR is alkaline and must not be allowed contact ith 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.

IMPORTANT NOTE

This data sheet is issued as a guide to the use of the product(s) concerned. Whilst **a.b.e.**® endeavours to ensure that any advice, recommendation, specification or information is accurate and correct, the company cannot accept any liability for application – because **a.b.e.**® has no direct or continuous control over where and how **a.b.e.**® products are applied.

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.® has a wealth of technical and practical experience built up over the years in the company's pursuit of excellence in building and construction technology.

Please consult our website for our latest data sheets.

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