



SAINT-GOBAIN

durarep FS

Fast Setting

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



DESCRIPTION

durarep 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.

durarep FS is a Class R4 structural repair mortar (EN1504-3).

USES

durarep 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.be.**'s technical department for larger type repairs areas. **durarep 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

TYPICAL PHYSICAL PROPERTIES

Compressive strengths – MPa – (ASTM C 109) (40x40x160mm prisms: EN 196-1; EN 12190; EN 1015-11)		
Water content	2.7 l/25 kg	
2 hours	10	
1 day	26	
3 days	35	
7 days	52	
28 days	61	
28 day	9,5	
Working life	10 °C	20 °C
	40 minutes	20 minutes
Setting time (EN 196-3)	20 °C	25 °C
	60 minutes	40 minutes
Coefficient of thermal expansion	8 to 12 x 10 ⁻⁶ /°C	
Open to vehicle traffic	2 hours @ 20 °C	
Water addition		
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 (EN1015-3)	180 - 220 mm	
Initial set ASTM C807 (EN 196-3)	12 - 18 min	
Final set ASTM C807 (EN 196-3)	20 - 26 min	

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 **durarep 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. Wait until the epoxy becomes tacky before applying the repair mortar.

Prime with **durabond GP** (at approximately 8 m²/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 **durarep 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.

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 **durarep FS**.

For flowable consistency add 2.5 to 2.7 ℓ of water per 25 kg **durarep 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 **durarep FS** powder mixed with water yields approximately 12 ℓ. Approximate fresh wet density is 2 300 kg/m³, 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.

durarep 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 **durarep 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 m² in size. **durarep 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, **durarep 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 **duracure WB** or **durabond GP** if available or as recommended by **a.b.e.**®. 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, **durarep FS** is fully compatible with the **abecote**® and **duracote** ranges of coatings.

Take care to remove any curing compounds before attempting to overcoat. It is recommended to use **durabond 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 **durarep FS**, a quick-setting single- component cementitious mortar applied in accordance with the recommendations of **a.b.e.**®, including the appropriate primer. The mortar must have a minimum 28 day compressive strength of 60 MPa.

durarep FS is a Class R4 Structural Repair Mortar (EN1504):

1 - Determination of compressive strength, EN 12190	82,3 N/mm ²	
2 - Chloride ion content, EN 1015-17	<0,01%	
3 - Measurement of bond strength by pull-off, EN 1542	3,1 MPa	
4 - Determination of retraction and expansion, EN 12617-4, Method controlled movements	Shrinkage: 3,1 MPa	
	Expansion: 3,0 MPa	
5 - Freeze-thaw cycling with icing salt immersion, EN 13687-1	2,8 MPa	
6 - Thermal compatibility: Thunder Shower, EN 13687-2	3,0 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	33,1 GPa	
9 - Determination of resistance of capillary absorption, EN 13057	0,04 kg/(m ² x h ^{0,5})	
10 - Determination of the coefficient of thermal expansion, EN 1770	17,7 μm/m °C)	
11 - Skid resistance, EN 13036-4	Dry	64
	Wet	43

PACKAGING

durarep FS is supplied in 25 kg polyethylene lined paper bags (Product Code: 30855).

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

durarep 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.**® 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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Call: (+27) 860 223 773 | www.abe.co.za