



# Fastfill

## Class R4 Rapid Setting Structural Repair Mortar

### Product Overview

Portland cement based, high strength, fibre reinforced, rapid setting shrinkage compensated, waterproof mortar for structural repair of concrete.

### Description

**FASTFILL** is a single component, polymer modified, fibre reinforced Portland cement-based repair mortar. It is rapid curing with enhanced polymeric properties and reliable strength development. Used for the durable repair of concrete subject to heavy wear such as roads, runways, bridges, decks, floors and footpaths. Also suitable for marine repairs and approved for potable water applications.

### Uses

Class R4 mortar, suitable for repair methods 3.1, 3.2, 4.4, 7.1, 7.2 as defined by EN 1504-3.

### Advantages

- Incorporates the latest cement chemistry, microsilica, fibre and styrene acrylic copolymer technology.
- Simply mixed with clean water, part bags can be mixed.
- Generally requires no substrate or inter-layer priming.
- Sets in 10 minutes at 20°C, yielding a durable, high strength mortar.
- Rapid strength development at sub-zero temperatures.
- Repairs can be walked on after one hour and opened vehicular traffic in two hours.
- Ideal for tidal repairs due to rapid setting properties.
- Bond strength exceeds tensile strength of concrete, ensuring monolithic performance.
- Dense matrix with low permeability to water.
- High diffusion resistance to acid gases & chloride ions.
- Resistant to sulphates to class DS-5M of BRE Special Digest 1.

### Compliance

- UKCA & CE marked in accordance with EN 1504-3.
- BBA Approved, Certificate No. 05/4276.
- Listed under Regulation 31 - England and Wales: Regulation 33 - Scotland: Regulation 30 - NI: for use with potable water.
- Highways Standard Series 5700 (Concrete Repairs) and CS 462 (Repair & Management of Deteriorated Concrete Structures).
- Compliant with LU Standard 1-085 'Fire Safety Performance of Materials'.

### Application Instructions

#### Preparation

Mechanically remove all damaged concrete or failed repairs back to a sound core. Except in new construction, expose the full circumference of the steel reinforcement 25mm behind the bars and 50mm beyond visible corrosion.

On cutting back, feather edges must be avoided. Step the perimeter of the repair to a depth of 10mm preferably using a power chisel or by saw or disc cutting.

The areas to be repaired must be free from all unsound material including laitance dust, oil, grease, corrosion by-products and organic growth.

Smooth surfaces should be roughened and reinforcement cleaned to bright steel using wet grit blasting techniques or equivalent approved methods. Power tools such as a needle gun, angle grinder or wire brush may be used on concrete which is not chloride contaminated.

- The compressive strength of the parent concrete should be minimum 20 MPa.

The prepared substrate should be thoroughly soaked with clean water until uniformly saturated without any standing water. In winter, use warm water or a heat source to ensure the substrate temperature is  $\geq 5^{\circ}\text{C}$  before application.

#### Treatment of Steel Reinforcement

Treat exposed steel reinforcement with 2 x 1mm coats of **STEEL REINFORCEMENT PROTECTOR 841** applied by brush.

#### Priming of Concrete

**FASTFILL** does not generally require a primer. Highly porous substrates may be primed with a **POLYMER ADMIXTURE 850** slurry coat. The slurry coat should also be used when treating larger areas of waterproof concrete.

#### Mixing

**FASTFILL** should be mechanically mixed using a forced action pan mixer or in a clean drum using a slow speed drill and paddle. A normal concrete mixer is **NOT** suitable.

For normal applications, use 3.5 litres of clean water per 25kg bag. For part bags, this equates to 5.5 volumes of powder to 1 volume of water. In cold temperatures, tepid water may be used to adjust working life. Mix for 2-3 minutes entraining as little air as possible. Use without delay.



For screeding applications or larger pockets in decks up to a maximum depth of 100mm a clean, washed, medium grade concreting sand can be added (up to 50% by weight). For deeper repairs, clean sharp 5-10mm aggregate can be added to a maximum of 100% by weight to produce a semi-pourable consistency

- Note - These instructions must be adhered to as Flexcrete will not be responsible for failure due to incorrect mixing.

### Placing

For normal applications, **FASTFILL** should be compacted, using a placing technique to ensure full contact with the substrate. When bulking out with aggregate, temporary support with shuttering may be required. Tamp to remove any entrapped air.

For multi-layer applications, it is important to ensure that the previous layers are well keyed and stable but not fully set (typically 15-30 minutes) prior to the application of subsequent layers. No inter-layer priming is required. Final profiling is achieved with a steel float.

On larger floor repairs, the area should be divided into individual bays of approximately 1m<sup>2</sup> to allow for completion of work within the open time. Do not polish the surface with a steel float, use a stiff brush on the wet surface to provide a slip-resistant finish.

In tidal works, allow a minimum cure time of 30 minutes prior to immersion.

### Curing

Normal concreting procedures must be adhered to. Protect from strong sunlight and drying winds with **CURE-SEAL WB**, polythene sheeting, damp hessian or similar.

### Cleaning and Storage

- All tools should be cleaned with water immediately after
- Materials can be stored for 12 months in dry, frost free conditions with unopened bags at 20°C.

### Packaging

- **FASTFILL** is supplied in 25kg bags.

### Yield and Coverage

- 13.3 litres per 25kg when mixed as supplied. Up to 23 litres bulked out with aggregate.
- 25kg as supplied covers 1.33m<sup>2</sup> at 10mm thickness.

### Health and Safety

- Safety Data Sheets are available on request.

### Application Top Tips

1. When bulking out, base the initial quantity of water on the amount of **FASTFILL** in the mix. Add the minimum amount of extra water to achieve the desired consistency. Do not exceed 4.5 litres per 25kg.
2. Take care if using very cold mixing water as this will accelerate setting of **FASTFILL**.
3. **DO NOT WET OUT OR PRIME** between layers.
4. **DO NOT OVER TROWEL**. If the mortar begins to slump, allow to stabilise and refinish.
5. When finishing, trowel from centre out towards the perimeter working into the edges of the repair.
6. Consider using a hand-held pointing gun for reinstating mortar joints.
7. Due to the rapid set of **FASTFILL**, only mix as much material to use within the working life of the mortar.
8. Do not hand mix smaller volumes.
9. For large floor repairs, divide into bays and adopt a checkerboard pattern limiting individual bay sizes to a maximum of 1m<sup>2</sup>.
10. **FASTILL** is particularly suited to repairs at temperatures as low as -10°C, but should not be applied to frozen substrates. In cold temperatures use tepid water to adjust working life. Very cold water will shorten working life and accelerate set.
11. Hot Weather Working (See separate Guide)
  - Store material in cool conditions to maximise working life.
  - Shade applied material from strong sunlight.
  - Spray apply a second mist coat of **CURE-SEAL WB**.
  - If possible, avoid extreme temperatures by working at night.

The information herein is correct to the best of our knowledge, but it does not necessarily refer to the particular requirements of the customer. If the customer has any particular requirements it should make them known in writing to Flexcrete Technologies Limited, and obtain further advice accordingly.



Technical Data

| Property   | Standard   | EN 1504 R4 Requirement                       | Typical Result  |
|--|------------|--|---|
| Compressive Strength Development @20°C                       | EN 12190   | ≥ 45 MPa @28 Days                            | 1 hour 14 MPa 1 day 40 MPa<br>2 hours 20 MPa 7 days 50 MPa<br>4 hours 30 MPa 28 days 60 MPa |
| Adhesive Bond  | EN 1542    | ≥ 2 MPa                                      | 3.4 MPa   |
| Chloride Ion Content   | EN 1015-17 | ≤ 0.05%                                      | ≤ 0.012%  |
| Carbonation Resistance                                       | EN 13295   | ≤ ref concrete                               | Passes  |
| Elastic Modulus  | EN 13412   | ≥ 20 GPa                                     | 26.1 GPa  |
| Capillary Absorption   | EN 13057   | ≤ 0.5 kg/(m <sup>2</sup> .h <sup>0.5</sup> ) | 0.35 kg/(m <sup>2</sup> .h <sup>0.5</sup> )   |
| Freeze/Thaw Cycling  | EN 13687-1 | ≥ 2 MPa                                      | 3.4 MPa   |
| Water Permeability Coefficient Equivalent concrete thickness | DIN 1048-1 | -  | 2.60 x 10 <sup>-14</sup> m/sec<br>7.5mm = 1000mm of typical concrete                        |
| Flexural Strength  | EN196-1    | -  | 11.6 MPa  |
| Tensile Strength   | BS 6319-7  | -  | 3.7 MPa   |
| Shrinkage  | EN 12617-4 | -  | 0.025% after 7 days   |
| Mixed Density  |            | -  | 2150kg/m <sup>3</sup> at 0.14 water: powder ratio   |
| Mixed Colour   |            | -  | Concrete grey   |
| Min Application Thickness<br>Max Application Thickness       |            | -  | 5mm<br>100mm on decks and floors (typical)<br>300mm when bulked out (typical)               |
| Min Application Temperature<br>Max Application Temperature   |            | -  | -10°C (refer to Technical Department)<br>40°C   |
| Working Life (approx.)                                       |            | -  | 10 minutes at 20°C  |
| Reaction to Fire   | EN 13501-1 | -  | A2 – s1, d0   |

The properties given above are obtained from laboratory tests: results obtained from on-site testing may vary according to site conditions.

