

# Monomix HD

## Class R4 High Strength Structural Repair Mortar

### Product Overview

**High strength, waterproof, fibre reinforced, shrinkage compensated mortar for the structural repair and reinstatement of concrete. CE-marked in accordance with BS EN 1504-3 Class R4.**

### Uses

Structural repair, rendering and profiling of vertical, horizontal and overhead surfaces, including trafficked areas. Suitable for repair methods 3.1, 3.3, 7.1, 7.2 as defined by BS EN 1504 -3.

### Advantages

- Incorporates the latest proven cement chemistry, microsilica, fibre and styrene acrylic copolymer technology.
- Pre-packaged material only requiring mixing with water on-site.
- Can be applied up to 80mm in a single layer in vertical, horizontal and overhead situations.
- High bond strength exceeds tensile strength of concrete, ensuring monolithic performance of the repair.
- Dense matrix offers low permeability to water at 10 bar pressure and very high diffusion resistance to acid gases and chloride ions.
- Resistant to sulphates to class DS-5M of BRE Special Digest 1.
- Improved tensile and impact strength. Excellent low sag properties.
- Economic mortar requiring no substrate or inter-layer priming. Part bags can be mixed.
- Easily overcoated with specialist membranes to provide further protection and aesthetic properties.

### Description

**MONOMIX HD** is a single component, polymer modified, fibre reinforced, standard density, high strength cementitious repair mortar. The thixotropic nature of the product enables easy high build hand and trowel application for the structural repair of voids and the rendering and re-profiling of vertical, horizontal and overhead surfaces. Can be applied using spray techniques in large areas. It is supplied as a single component system requiring only the addition of clean water.

### Compliance

- CE-marked in accordance with BS EN 1504-3 Class R4. Suitable for repair methods 3.1, 3.3, 7.1, 7.2 as defined by BS EN 1504 -3.
- Compliant with Highways Agency Standard BD27/86 for the repair of Highway Structures.
- Compliant with LU Standard 1-085 'Fire Safety Performance of Materials'.

### Specification Clause

The repair mortar shall be a single component cementitious mortar, incorporating microsilica, fibre and styrene acrylic copolymer technology, and shall be CE-marked in accordance with BS EN 1504-3 Class R4. It shall comply with the following performance specification:

- 5-80mm application thickness in a single layer even overhead.
- Compressive strength at 20°C of at least 33 MPa in 1 day and 56.5 MPa in 28 days.
- Flexural strength at 28 days (20°C & 65% R.H) of at least 8.6 MPa in accordance with EN196-1.
- Resistant to sulphates to class DS-5/5m of BRE Special Digest 1.



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EN1504-3: Concrete repair product for structural repair  
 PCC mortar (based on hydraulic cement polymer modified)

Compressive Strength	: Class R4 ≥ 45 MPa
Adhesive Bond	: Class R4 ≥ 2.0 MPa
Chloride Ion Content	: ≤ 0.05%
Carbonation Resistance	: Passes
Elastic Modulus	: 20 GPa
Thermal Capability Part 1	: Class R4 ≥ 2.0 MPa
Capillary Absorption	: 0.064 kg.m <sup>-2</sup> .h <sup>0.5</sup>
Dangerous Substances	: Complies with 5.4
Reaction to Fire	: Euroclass A2-s1, d0



Technical Data / Mechanical Characteristics

Property	Standard	BS EN 1504 R4 Requirement	Result
Compressive Strength	EN 12190	≥ 45 MPa	28 days: 64 MPa
Compressive Strength Development @20°C	BS4551		1 day 33.0 MPa 7 days 44.5 MPa 28 days 56.5 MPa
Adhesive Bond	EN 1542	≥ 2.00 MPa	2.50 MPa
Chloride Ion Content	EN 1015-17	≤ 0.05%	0.05%
Carbonation Resistance	EN 13295	≤ ref concrete	Passes
Elastic Modulus	EN 13412	≥ 20 GPa	20.6 GPa
Capillary Absorption	EN 13057	≤ 0.5 kg.m <sup>-2</sup> .h <sup>-0.5</sup>	0.064 kg.m <sup>-2</sup> .h <sup>-0.5</sup>
Freeze/Thaw Cycling	EN 13687-1	≥ 2.0 MPa	2.23 MPa
Water Permeability Coefficient Equivalent Concrete Thickness	Taywood Test	-	3.98 × 10 <sup>-15</sup> m/sec. 3.9mm of Monomix HD = 1000mm of concrete
Flexural Strength	EN196-1	-	8.6 MPa
Shrinkage	BS EN 12617-4	-	0.015% after 7 days
Mixed Density		-	2100 kgs/m <sup>3</sup> at 0.10 water: powder ratio
Mixed Colour		-	Concrete grey
Min Application Thickness Max Application Thickness		-	5mm 80mm per layer
Min Application Temperature Max Application Temperature		-	5°C 40°C
Working Life (approx.)		-	60 minutes at 20°C 30 minutes at 40°C
Reaction to Fire	EN 13505-1	Euroclass	Euroclass A2 – s1, d0

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

Application Instructions

Preparation

Mechanically remove all damaged concrete, brick or stone back to a sound core. Wherever possible, the full circumference of the steel reinforcement should be exposed to at least 25mm behind the bars and 50mm beyond the point at which corrosion is visible.

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

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

Smooth surfaces should be roughened, all loose material and surface laitance removed and reinforcement cleaned to bright steel using wet grit blasting techniques or equivalent approved methods.

The strength of the concrete sub-base should be a minimum of 20 MPa.

The prepared substrate should be thoroughly soaked with clean water until uniformly saturated without any standing water.

Treatment of Steel Reinforcement

All exposed steel reinforcement should be treated with 2 x 1mm coats of **STEEL REINFORCEMENT PROTECTOR 841** applied by brush (See separate Data Sheet for full details).

NB: When carrying out repairs in new construction, it is not necessary to fully expose any reinforcing bars.

Priming of Concrete

**MONOMIX HD** is highly polymer modified and as a result concrete surfaces do not generally require a primer. Highly porous substrates should be primed with **BONDING BRIDGE 842** prior to the application of the repair mortars (See separate Data Sheet for full details).



### Mixing

**MONOMIX HD** should be mechanically mixed using a forced action pan mixer or in a clean drum using a drill and paddle. A normal concrete mixer is **NOT** suitable. For normal applications, typically use between 2.3 - 2.7 litres of clean water per 25kg bag. For part bags, use 7 - 8 volumes of powder to one volume of water. Typically, for high build applications use 2.5 litres of clean water per 25kg bag which gives a water: powder ratio of 10%. Normal mixing time depends upon the type of mixer used; 2-3 minutes is average. Mix so as to entrain as little air as possible. Use without delay.

**Please Note: It is vital to the success of the application that these instructions are strictly adhered to. Flexcrete cannot be held responsible for any product failures due to incorrect mixing.**

### Placing

**MONOMIX HD** can be applied by float or trowel as a render, resulting in application thicknesses of 80mm, even in soffit situations. If necessary, support with shuttering to allow for compaction if working to reveals, etc. The application thickness achievable is dependent upon the substrate and care should be taken to ensure that an initial thickness of **MONOMIX HD** is well placed and adhered before building up to larger depths.

For repairs which require multi-layer applications, it is important to ensure that previous layers are well keyed and stable but not fully set (2-6 hours dependent on temperature) prior to the application of subsequent layers. No inter-layer priming is required. Final profiling of a high quality is easily achieved with a steel float.

For larger areas of repair, **MONOMIX HD** can be applied using spray techniques. At the mixing stage, use the higher level of water addition to produce a mix suitable for this method of application.

### Curing

Normal concreting procedures should be strictly adhered to. It is important that the surface of the mortar is protected from strong sunlight and drying winds with **FLEXCRETE CURING MEMBRANE WB**, polythene sheeting, damp hessian or similar (See separate Data Sheet for full details).

### Cleaning and Storage

All tools should be cleaned with water immediately after use.

Materials can be stored for 12 months in dry, frost free conditions with unopened bags at 20°C.

### Packaging

**MONOMIX HD** is supplied in 25kg bags.

### Yield and Coverage

13.1 litres per 25kg bag.

A 25kg bag covers 1.31m<sup>2</sup> at 10mm thickness.

### Limitations

Do not use **MONOMIX HD** when the temperature is below 5°C and falling. Do not use **MONOMIX HD** on waterproof concrete without referring to the Flexcrete Technical Department.

### Health and Safety

Safety Data Sheets are available on request.

#### Application Top Tips

1. For multi-layer application, use the fingers of a gloved hand to stipple the surface of the first layer.
2. **DO NOT WET OUT OR PRIME** between layers.
3. If the mortar thickens, remix but **DO NOT ADD EXTRA WATER**.
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. For large areas of repair consider using spray techniques. (See separate Guide)
7. Cold Weather Working (See separate Guide)
  - ≥3°C on a rising thermometer.
  - ≥5°C on a falling thermometer.
8. 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 coat of **CURING MEMBRANE 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.



FM 41091  
EMS 597350  
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Quality  
Environmental  
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