

# FMM

## UNIVERSAL FIBRE-REINFORCED CEMENTITIOUS MATRIX FOR FPM AND FCM FRCM STRENGTHENING SYSTEMS

**53 MPa**

COMPRESSIVE STRENGTH  
(28D)

**6.4 MPa**

FLEXURAL STRENGTH (28D)

**2.0 MPa**

ADHESION BOND (28D)

**4 mm**

MAX GRAIN SIZE

### DESCRIPTION

FMM is a pre-blended, fibre-reinforced inorganic cementitious matrix formulated as the universal embedding and bonding medium for FIDSTRONG FRCM (Fabric-Reinforced Cementitious Matrix) strengthening systems. FMM is compatible with both FIDSTRONG FPM PBO mesh and FCM carbon fibre mesh, providing the inorganic matrix that encapsulates the fibre reinforcement, transfers loads to the substrate, and delivers the fire resistance and vapour permeability that distinguish FRCM from organic epoxy-based FRP.

### INTENDED USES

- Matrix material in FRCM systems incorporating FIDSTRONG FPM (PBO mesh) — flexural, shear, and confinement strengthening of concrete and masonry with full fire resistance and vapour permeability
- Matrix material in FRCM systems incorporating FIDSTRONG FCM (carbon fibre mesh) — efficient bi-directional strengthening of concrete and masonry structures
- Historical and heritage masonry where vapour permeability and substrate breathability are required
- Applications where fire-resistance requirements preclude the use of organic (epoxy) adhesive systems

### CHARACTERISTICS

- Universal formulation — a single mortar product compatible with both PBO (FPM) and carbon fibre (FCM) mesh systems, simplifying procurement and site logistics
- High mechanical performance: 53 MPa compressive strength and 6.4 MPa flexural strength at 28 days
- Strong adhesion ( $\geq 2.0$  MPa) to concrete and masonry substrates
- Vapour-permeable — supports breathable FRCM systems for historic structures and moisture-sensitive substrates
- Pre-blended, just-add-water — consistent mix quality, minimal waste, rapid deployment

### PRODUCT INFORMATION

PROPERTY	VALUE
Packaging	25 kg / bag
Mixing Water	Approx. 5 litres / bag
Max Aggregate Size	4 mm
Density (fresh)	1,900 kg/m <sup>3</sup>
Shelf Life	12 months in original, sealed packaging
Storage	Dry, protected from moisture and frost

## TECHNICAL PROPERTIES (CURED, 28 DAYS)

PROPERTY	TEST METHOD	VALUE
Compressive Strength	EN 196-1	<b>53 MPa</b>
Flexural Strength	EN 196-1	6.4 MPa
Adhesion Bond to Concrete	EN 1015-12	≥ 2.0 MPa

## APPLICATION INSTRUCTIONS

### Step 1 — Substrate Preparation

- Remove loose material, paint, oil, and carbonated layers by grinding or wire brushing. Substrate must be sound, clean, and free of dust. Minimum surface tensile strength: 1.0 MPa.
- Wet the substrate thoroughly before applying mortar to prevent premature water absorption. For carbon mesh (FCM) systems, achieve a Saturated Surface Dry (SSD) condition.

### Step 2 — Mixing

- Pour one bag (25 kg) into a paddle mixer or drum mixer. Add approximately 5 litres of clean water. Mix for 3–4 minutes until smooth and homogeneous. Allow to stand 1–2 minutes before use.
- Do not add extra water once mixing is complete. Use within 30 minutes.

### Step 3 — First Mortar Layer and Mesh Placement

- Apply the first layer of FMM at 3–5 mm thickness using a trowel or rendering machine. While still fresh, press the pre-cut FPM or FCM mesh firmly and evenly into the surface. Ensure full mortar penetration through all mesh openings with no dry areas or air pockets. Overlap mesh sheets ≥ 300 mm; wrap corners with minimum 20 mm radius.

### Step 4 — Second Mortar Layer

- Once the first layer has set (typically 2–4 h at 20 °C), apply the second FMM layer at 3–5 mm to fully encapsulate the mesh. Total system thickness: 6–10 mm. Finish as required. For multi-layer systems, apply wet-on-wet; treat the interface if the previous layer has hardened.

## LIMITATIONS

- Do not apply at temperatures below +5 °C or above +35 °C. Protect from frost, rain, and direct sunlight during curing (minimum 24 h).
- For use with FIDSTRONG FPM or FCM mesh only. Do not use with FRP fabrics designed for epoxy-impregnation (FSC series).
- Structural design must be certified by a licensed professional engineer per relevant FRCM guidelines (ACI 549.4R / ACI 549.6R or CNR-DT215).

## HEALTH & SAFETY

### NOTE

Cement-based product. Wear dust mask, nitrile gloves, and safety goggles during mixing and application. Avoid skin and eye contact with fresh mortar. Refer to the current SDS for full guidance. This TDS does not replace the SDS.

## COMPATIBLE SYSTEM PRODUCTS

CODE	FIBRE TYPE	NOTES
<b>FPM 17/80</b>	PBO (bidirectional)	80 + 17 g/m <sup>2</sup> ; general strengthening applications
<b>FPM 18/70</b>	PBO (bidirectional)	70 + 18 g/m <sup>2</sup> ; ACI 549.4R-tested FRCM system
<b>FPM 44</b>	PBO (unidirectional)	44 g/m <sup>2</sup> ; flexural and shear strengthening

CODE	FIBRE TYPE	NOTES
FPM 88	PBO (unidirectional)	88 g/m <sup>2</sup> ; CNR-DT215 tested; high-performance applications
FCM	Carbon fibre (bidirectional)	4,500 MPa; 0°+90° grid; concrete and masonry FRCM systems

## LEGAL NOTES

The information and recommendations in this document are given in good faith based on current knowledge and experience of the products when properly stored, handled, and applied under normal conditions. Differences in materials, substrates, and site conditions mean that no warranty in respect of merchantability or fitness for a particular purpose can be inferred from this information. The information does not relieve the user of the responsibility of testing products for their intended application. All orders are accepted subject to our current terms of sale and delivery. Refer to the most recent TDS at [www.fidstrong.com](http://www.fidstrong.com).