FPM 44

HIGH-STRENGTH, HIGH-DUCTILITY PBO MESH FOR FRCM STRUCTURAL STRENGTHENING SYSTEMS

5,800 MPa	270 GPa	44 g/m²	0.028 mm
PBO FIBRE TS	PBO FIBRE MODULUS	AREAL WEIGHT	NOMINAL THICKNESS (WARP)

DESCRIPTION

FPM 44 is a high-strength PBO (polybenzoxazole) fibre mesh designed for use in Fabric-Reinforced Cementitious Matrix (FRCM) structural strengthening systems. Combined with FIDSTRONG FMM, it forms an inorganic-matrix composite that delivers exceptional tensile capacity, ductility, and durability — without the fire and thermal limitations of organic epoxy-based systems.

INTENDED USES

- Flexural and shear strengthening of reinforced concrete beams, slabs, and walls
- Confinement and seismic retrofit of columns and masonry walls
- Strengthening and repair of masonry arches, vaults, and historical structures
- Applications requiring fire resistance, breathability, or compatibility with masonry substrates where epoxy is unsuitable

CHARACTERISTICS

- Exceptional PBO fibre strength (5,800 MPa) and stiffness (270 GPa) — superior to aramid and comparable to high-modulus carbon fibre
- High elongation (2.5 %) — increases structural ductility and deformation capacity under seismic loads
- Inorganic matrix compatibility — vapour-permeable system suitable for historic masonry and moisture-sensitive substrates
- Fire-resistant and alkali-resistant — maintains performance in environments where organic FRP systems are restricted
- Non-corrosive; low aesthetic impact; can be plastered or painted over

PRODUCT INFORMATION

PROPERTY	VALUE
Colour	Gold yellow
Fibre Orientation	Unidirectional (0°)
Available Width	100 cm (unidirectional: 25 cm) or customised
Packaging	20 m / roll or customised length
Fibre Content	100 % PBO
Storage	Dry, away from direct sunlight, −5 °C to +35 °C
Shelf Life	Unlimited in original, unopened packaging

TECHNICAL PROPERTIES

PROPERTY	VALUE
PBO FIBRE (RAW)	
Tensile Strength	**5,800 MPa**
Tensile Elastic Modulus	270 GPa
Elongation at Break	2.5 %
Density	1.56 g/cm³
Decomposition Temperature	650 °C
PBO MESH (PRODUCT)	
Areal Weight — Warp	44 g/m²
Areal Weight — Weft	—
Nominal Thickness — Warp	0.028 mm
Nominal Thickness — Weft	—
Dry Mesh Tensile Elastic Modulus	180 GPa

COMPATIBLE SYSTEM PRODUCTS

CODE	FUNCTION	NOTES
FMM	Cementitious matrix	Inorganic fibre-reinforced mortar for embedding FPM mesh layers
FCA 10/450	CFRP anchor	Pre-cured rod anchor for termination zones and corner details

APPLICATION INSTRUCTIONS

> **NOTE**
> Full installation procedure is specified in the FIDSTRONG FMM Method Statement. The summary below is for reference only.

KEY INSTALLATION STEPS

- **Substrate preparation:** Remove loose material; repair spalls with repair mortar. Wet the substrate before applying the first mortar layer. Minimum surface tensile strength: 1.0 MPa.
- **First mortar layer:** Apply FMM at 3–5 mm thickness using a trowel or rendering machine. Embed the pre-cut FPM mesh into the fresh mortar layer, pressing firmly. Overlap adjacent sheets by ≥ 300 mm; wrap corners with minimum 20 mm radius.
- **Second mortar layer:** Once the first layer has set (typically 2–4 h), apply a second mortar layer at 3–5 mm to fully encapsulate the mesh. Finish surface as required.

LIMITATIONS

- Design calculations must be certified by an independent licensed professional engineer.
- Minimum corner radius: 20 mm. Minimum mesh overlap: 300 mm.
- For use only with inorganic cementitious matrix (FMM). Do not use with organic epoxy resins.

HEALTH & SAFETY

NOTE

Refer to the current SDS for handling, storage, and disposal. Wear appropriate PPE (gloves, goggles, dust mask) during installation. This TDS does not replace the SDS.

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.