FSC200C

UNIDIRECTIONAL CARBON FIBRE FABRIC FOR STRUCTURAL STRENGTHENING

3,500 MPa	230 GPa	0.111 mm	200 g/m²
TENSILE STRENGTH	ELASTIC MODULUS	NOMINAL THICKNESS	AREAL WEIGHT

DESCRIPTION

FSC200C is a unidirectional carbon fibre fabric (200 g/m²) for externally bonded structural strengthening. Used with FIDSTRONG FSE-series epoxy systems (primer + saturating resin), it forms a high-performance FRP composite for upgrading concrete, masonry, and timber elements.

INTENDED USES

- Flexural and shear strengthening of reinforced concrete beams, slabs, and walls
- Column confinement for increased axial and seismic capacity
- Seismic retrofitting of existing structures to updated code requirements
- Repair and rehabilitation of ageing or damaged structural elements

CHARACTERISTICS

- High tensile strength-to-weight ratio — non-corrosive, alkali-resistant, chemically inert
- Flexible — conforms to complex geometries including circular columns and curved surfaces
- Negligible increase in section size — minimal aesthetic impact on the finished structure
- Rapid installation — no heavy equipment, no welding, no fire risk

STANDARDS COMPLIANCE

Testing per ASTM D3039 (≥ 25 specimens per property). Design methodology per ACI 440.2R. Fibre properties consistent with EN 2561.

PRODUCT INFORMATION

PROPERTY	VALUE
Fibre Type	Carbon fibre, PAN-based
Fibre Orientation	Unidirectional (0°)
Colour	Black
Areal Weight	200 ± 10 g/m²
Available Widths	100 / 150 / 200 / 250 / 300 / 500 / 600 mm
Roll Length	100 m (standard)
Storage	Dry, no direct sunlight, −5 °C to +35 °C
Shelf Life	Unlimited in original, unopened packaging

MECHANICAL PROPERTIES

NET-FIBRE AREA BASIS — NOMINAL THICKNESS 0.111 MM

PROPERTY	MEAN VALUE	CHARACTERISTIC *
Tensile Strength	**3,500 MPa**	3,200 MPa
Tensile Elastic Modulus	230 GPa	230 GPa
Elongation at Break	1.7%	1.5%
Resistance per Unit Width	389 kN/m	355 kN/m
Stiffness per Unit Width	25.5 MN/m	25.5 MN/m

GROSS-LAMINATE AREA BASIS — CURED LAMINATE THICKNESS 0.40 MM

PROPERTY	MEAN VALUE	CHARACTERISTIC *
Tensile Strength	971 MPa	888 MPa
Tensile Elastic Modulus	63.8 GPa	63.8 GPa
Elongation at Break	1.7%	1.5%

** Characteristic values per ACI 440.2R §4.3.1 (referencing ACI 440.8): strength f_{fu}^{*} = mean − 3σ from ≥ 20 specimens (ASTM D3039); modulus reported as mean value; elongation $\varepsilon_{fu}^{*} = f_{fu}^{*}/E_f$. This statistical basis provides a 99.87 % probability that actual properties exceed the reported characteristic values.*

APPLICATION INSTRUCTIONS

Step 1 — Surface Preparation

- Abrade or blast to remove laitance, dust, and grease. Minimum concrete surface tensile strength: 1.5 MPa.
- Fill irregularities > 0.5 mm with FSE502. Allow to cure fully before proceeding.
- Round all corners and edges to a minimum radius of 20 mm.
- Substrate must be dry: moisture content ≤ 4 % (ASTM D4263).

Step 2 — Primer Application

- Mix FSE302 at 2:1 by weight; blend for 3 minutes with a low-speed paddle mixer.
- Apply by brush, roller, or spray at 200–300 g/m². Allow to reach tacky state before proceeding.

Step 3 — Fabric Cutting

- Cut to required length using sharp, heavy-duty scissors or a rotary cutter.
- Dull tools damage fibres at cut edges and reduce lap-joint efficiency.

Step 4 — Saturation and Lay-Up

- Apply FSE322 saturating resin uniformly to the primed substrate at 500–700 g/m².
- Place pre-cut fabric onto the wet resin, aligning fibres with the intended load path.
- Consolidate with a laminating roller from centre outward to remove air and ensure full wet-out.
- Apply a top coat of FSE322 over the fabric layer. For multiple layers: apply wet-on-wet.

Step 5 — Protection and Curing

- Protect from disturbance and direct sunlight. Full cure: minimum 7 days at 20 °C.
- Exterior UV protection: broadcast silica sand (0.5–1.0 mm) into final wet resin, then apply a compatible protective top coat after curing.

> **WARNING**
> The cured FRP must not remain exposed to UV radiation. UV protection is mandatory for all exterior installations.

LIMITATIONS

- All structural design must be prepared and certified by a licensed professional engineer.

- Minimum corner radius: 20 mm. Minimum lap splice length (fibre direction): 100 mm.
- Not suitable for substrates with surface tensile strength below 1.5 MPa.
- Application temperature: +5 °C to +35 °C (substrate and ambient).

HEALTH & SAFETY

> **NOTE**
> Refer to the current Safety Data Sheet (SDS) for handling, storage, and disposal. Wear nitrile gloves, safety glasses, and a dust mask when cutting dry fabric. This TDS does not replace the SDS.

COMPATIBLE SYSTEM PRODUCTS

CODE	FUNCTION	NOTES
FSE302	Primer	Moisture-tolerant adhesion primer; 2:1 mix ratio
FSE322	Saturating resin	Standard wet lay-up impregnating resin
FSE323H / 323L	Saturating resin	High / low viscosity variants for specific substrate conditions
FSE502	Levelling adhesive	Substrate repair and surface regularisation
FX 50	Carbon fibre rope	FRP termination anchoring and edge wrapping

LEGAL NOTES