FSE362

HIGH-MODULUS STRUCTURAL ADHESIVE FOR CARBON FIBRE PLATE BONDING SYSTEMS

45 MPa	4.0 GPa	2 : 1	50 min
TENSILE STRENGTH	ELASTIC MODULUS	MIX RATIO (BY WEIGHT)	POT LIFE (23 °C)

DESCRIPTION

FSE362 is a two-component, high-modulus epoxy paste adhesive for bonding pultruded carbon fibre reinforced polymer (CFRP) plates to concrete, masonry, steel, and timber substrates. Its thixotropic consistency holds position on vertical and overhead surfaces without sagging, while the high elastic modulus (4.0 GPa) ensures efficient shear transfer between plate and substrate across the full service life of the strengthening system.

INTENDED USES

- Bonding of FIDSTRONG FSL-series pultruded CFRP plates in externally bonded (EB) strengthening applications
- Flexural strengthening of reinforced concrete beams, slabs, and bridge decks
- Increasing the load-bearing capacity of structural elements without significant section increase
- Repair and rehabilitation of ageing, damaged, or understrength concrete and masonry structures

CHARACTERISTICS

- High elastic modulus (4.0 GPa) — maximises shear transfer and composite action between plate and substrate
- Thixotropic paste (index ≥ 4.0) — no sagging on vertical or overhead surfaces; ideal bond-line thickness control
- Moisture tolerant — bonds reliably on damp (not wet) substrates before, during, and after curing
- Colour-coded components (grey / white) — easy mixing verification; convenient 2 : 1 weight ratio
- High creep resistance under sustained loads — suitable for permanent structural applications
- Solvent-free; low VOC — suitable for occupied or poorly ventilated environments

PRODUCT INFORMATION

PROPERTY	VALUE
Appearance	Component A: grey; Component B: white; Mixed: light grey
Mix Ratio	A : B = 2 : 1 by weight
Packaging	10 kg (A) + 5 kg (B) per kit, or customised packaging
Storage	Dry, away from direct sunlight, +4 °C to +32 °C
Shelf Life	18 months in original, unopened packaging

TECHNICAL PROPERTIES

MIXED / CURED RESIN — TESTED AT 23 °C / 50 % RH UNLESS STATED

PROPERTY	TEST METHOD	VALUE
HANDLING (MIXED RESIN)		

PROPERTY	TEST METHOD	VALUE
Pot Life (500 g mass)	—	150 min (10 °C) / 50 min (23 °C) / 40 min (30 °C)
Full Cure	—	7 days (23 °C)
Service Temperature	—	+5 °C to +40 °C
Thixotropic Index	—	≥ 4.0
Sagging / Non-vertical Mobility	—	≤ 2.0 mm
Consumption	—	3–4 kg/m²
MECHANICAL (CURED, 7 DAYS)		
Tensile Strength	ASTM D638	**45 MPa**
Tensile Elastic Modulus	ASTM D638	**4,000 MPa**
Elongation at Break	ASTM D638	2.07 %
Compressive Strength	ASTM D695	117 MPa
Flexural Strength	ASTM D790	115 MPa
Density (cured)	—	1.4 g/cm³
Deflection Temperature (HDT)	ASTM D648	65 °C
Water Absorption	ASTM D570	0.06 %
ADHESION (CURED)		
Shear Strength	ASTM D732	56 MPa
Bond Strength to Concrete	ASTM C882	40 MPa

COMPATIBLE SYSTEM PRODUCTS

CODE	FUNCTION	NOTES
FSL series	Pultruded CFRP plates	1.2 mm and 1.4 mm nominal thickness; standard and high-strength grades
FSE302	Substrate primer	Applied to concrete substrate before FSE362 on damp or low-strength surfaces
FSE502	Levelling adhesive	Substrate repair and surface regularisation prior to plate bonding

APPLICATION INSTRUCTIONS

Step 1 — Surface Preparation

- Abrade or blast concrete to remove laitance, dust, oil, and loose particles. Minimum concrete pull-off strength: 1.5 MPa (ASTM C1583).
- Fill surface irregularities > 0.5 mm with FSE502 levelling adhesive; allow full cure. Substrate moisture content ≤ 4 % (ASTM D4263).

Step 2 — Plate Preparation

- Cut plate to required length with a diamond-blade saw. Lightly abrade the bonding face with 80-grit sandpaper and remove carbon dust with clean compressed air immediately before bonding.

Step 3 — Adhesive Preparation

Step 4 — Plate Bonding

- Apply FSE362 to the prepared substrate at 2 mm thickness and to the bonding face of the plate at 2–3 mm thickness, within the pot life.
- Press the plate firmly onto the substrate. Roll along the plate centreline with a hard rubber roller until adhesive squeezes uniformly from both long edges — confirming full coverage and a void-free bond line.
- Remove surplus adhesive from plate edges. Final bond line thickness after compaction: 2–4 mm.

Step 5 — Curing and Protection

- Protect from traffic, impact, and direct sunlight until full cure (7 days at 23 °C). Apply a fireproof or cementitious protective coating over the full plate surface after cure.

> **WARNING**
> The cured CFRP plate and adhesive must not remain exposed to UV radiation. A protective coating is mandatory for all installations.

LIMITATIONS

- Application temperature: +5 °C to +35 °C (substrate and ambient). Do not apply to surfaces with standing water.
- Minimum plate end anchorage zone: verify against point of zero moment per ACI 440.2R.
- All structural design must be prepared and certified by a licensed professional engineer.

HEALTH & SAFETY

> **NOTE**
> Refer to the current Safety Data Sheet (SDS) for handling, storage, and disposal. Wear nitrile gloves, safety goggles, and respiratory protection when cutting or grinding plates. Carbon fibre dust is an irritant. This TDS does not replace the SDS.

LEGAL NOTES