FSE523

LOW-VISCOSITY EPOXY RESIN FOR STRUCTURAL CRACK INJECTION

≤ 300 mPa·s	≥ 25 MPa	≥ 1.5 GPa	2 : 1
VISCOSITY (MIXED)	TENSILE STRENGTH	ELASTIC MODULUS	MIX RATIO (BY WEIGHT)

DESCRIPTION

FSE523 is a two-component, low-viscosity, solvent-free epoxy resin for restoring structural continuity and load transfer capacity to cracked concrete, masonry, timber, and other substrates. Its ultra-low viscosity (≤ 300 mPa·s) allows complete penetration of cracks as narrow as 0.1 mm under low-pressure injection or gravity, producing a cured repair that bonds the crack faces and restores monolithic behaviour to the element.

INTENDED USES

- Low-pressure injection of structural cracks in concrete beams, columns, slabs, walls, and bridge elements
- Gravity filling of open cracks and surface defects in horizontal concrete elements
- Repair of internal honeycombing and voids in concrete members
- Restoration of load-transfer across dormant (non-moving) cracks prior to external strengthening

CHARACTERISTICS

- Ultra-low viscosity (≤ 300 mPa·s) — penetrates cracks as narrow as 0.1 mm; no heating required
- Zero shrinkage on curing — maintains full crack-face contact and bond integrity
- High tensile and shear bond — restores structural continuity across the repaired crack
- Good resistance to water, acids, alkalis, and salt — suitable for aggressive environments
- Excellent toughness and impact resistance after curing
- Solvent-free, low VOC; non-toxic with minimal odour

PRODUCT INFORMATION

PROPERTY	VALUE
Appearance	Component A: grey/white; Component B: grey/white; Mixed: grey/white
Mix Ratio	A : B = 2 : 1 by weight
Packaging	20 kg (A) + 10 kg (B) per kit; also available in injection cartridges
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
Mixture Viscosity	—	**≤ 300 mPa·s**
Pot Life	—	150 min (10 °C) / 40 min (23 °C) / 30 min (30 °C)
Service Temperature	—	−5 °C to +40 °C
MECHANICAL (CURED, 7 DAYS)		
Tensile Strength	ASTM D638	**≥ 25 MPa**
Elastic Modulus	ASTM D638	≥ 1.5 GPa
Elongation at Break	ASTM D638	≥ 1.8 %
Flexural Strength	ASTM D790	≥ 30 MPa
Compressive Strength	ASTM D695	≥ 80 MPa
Density (cured)	—	1.1 ± 0.1 g/cm³
Linear Shrinkage	—	≤ 0.3 %
ADHESION (CURED)		
Steel-to-Steel Shear	ASTM D1002	≥ 25 MPa
Steel-to-Steel Butt Tensile	—	≥ 20 MPa
Bond to Dry Concrete	ASTM C882	≥ 2.5 MPa (concrete failure)
Bond to Wet Concrete	ASTM C882	≥ 1.8 MPa (concrete failure)

COMPATIBLE SYSTEM PRODUCTS

CODE	FUNCTION	NOTES
FSE502	Surface sealing paste	Used to seal the crack surface and set injection ports before FSE523 injection

APPLICATION INSTRUCTIONS

Step 1 — Crack Cleaning and Port Setting

- Remove dust and debris from the crack by wire brushing and blowing with oil-free compressed air. The crack must be free of water, oil, and loose particles.
- For pressure injection: set injection ports at 200–300 mm spacing along the crack. Seal the crack surface and port bases with FSE502 paste adhesive; allow FSE502 to cure before injecting.

Step 2 — Cartridge Set-Up and Mixing

- Remove the twist-cap and port plug from the cartridge. Insert a flow restrictor and attach a static mixer nozzle. Load the cartridge into a dual-component caulking gun.
- Point the gun upward and squeeze to purge trapped air; discard the first portion of mixed resin to ensure a uniform blend before application.

Step 3 — Gravity Fill (horizontal cracks)

- Clean the vee-notched crack surface with oil-free compressed air. Dispense FSE523 slowly into the crack until completely filled. Seal the underside of the slab if cracks are visible through the soffit.

Step 4 — Pressure Injection (vertical / overhead cracks)

LIMITATIONS

- For dormant (non-moving) cracks only. Active or dynamic cracks require a flexible sealant solution.
- Minimum crack width for reliable injection: 0.1 mm (gravity fill) or 0.05 mm (pressure injection).
- Application temperature: −5 °C to +35 °C; pot life is significantly shorter above 30 °C.

HEALTH & SAFETY

> **NOTE**
> Refer to the current Safety Data Sheet (SDS) for handling, storage, and disposal. Wear chemical-resistant gloves and safety goggles. Avoid skin and eye contact with uncured resin. This TDS does not replace the SDS.

LEGAL NOTES