

MS-FSC

CARBON FIBER FABRIC STRENGTHENING SYSTEM METHOD STATEMENT

FSC200–600

FABRIC SERIES

FSE302 + FSE322

EPOXY SYSTEM

Wet Lay-Up

SYSTEM TYPE

1. SCOPE

This method statement covers the installation procedure for the FIDSTRONG carbon fiber fabric strengthening system using the wet lay-up technique. It applies to FSC200, FSC230, FSC300 and FSC600 series unidirectional carbon fiber fabrics bonded with FSE302 primer, FSE322 saturating/impregnation resin and FSE502 levelling compound.

All work shall be performed by trained applicators in accordance with the structural engineer's design drawings and specifications.

2. MATERIALS & EQUIPMENT

Materials

PRODUCT	DESCRIPTION
FSC200 / FSC230 / FSC300 / FSC600	Unidirectional carbon fiber fabric (200–600 g/m ²)
FSE302	Epoxy primer — substrate sealer and bond enhancer
FSE322	Epoxy saturating/impregnation resin — fiber saturation and bonding
FSE502	Epoxy levelling compound — surface levelling and corner filling

Equipment

- Low-speed electric mixer (300–400 rpm)
- Plastic laminating roller (ribbed)
- Heavy-duty scissors or fabric cutter
- Measuring containers, mixing buckets
- PPE: nitrile gloves, safety glasses, respirator (for confined spaces)
- Sandblaster or concrete grinder, compressed air

3. SURFACE PREPARATION

- 1. Remove surface contaminants** — Sandblast or mechanically grind the concrete substrate to remove all coatings, paint, dust, grease, laitance and loose particles. The surface must be structurally sound and dry.
- 2. Level irregularities** — Fill all surface irregularities exceeding 0.5 mm with FSE502 levelling compound. Round all external corners to a minimum radius of 20 mm using FSE502 to prevent stress concentration on the fabric.
- 3. Final cleaning** — Clean the prepared surface thoroughly with compressed air or vacuum. The substrate must be dry and free of dust before proceeding.

4. EPOXY MIXING

1. **Pre-mix individual components** — Stir Part A and Part B of FSE322 separately to ensure uniform colour and consistency within each component.
2. **Combine at correct ratio** — Mix FSE322 Part A and Part B at a weight ratio of **A : B = 2 : 1**. Weigh components accurately using a calibrated scale. (For FSE323H or FSE323L variants, use **3 : 1** ratio.)
3. **Mechanical mixing** — Mix with a low-speed electric mixer at 300–400 rpm for a minimum of 3 minutes until the mixture achieves a uniform, streak-free colour with no visible bubbles.
4. **Observe pot life** — The mixed epoxy has a pot life of approximately 70 minutes at 23 °C for a 500 g mass (per the FSE322 technical data sheet). Higher ambient temperatures and larger batches shorten pot life — plan each batch on what can be laid within that window. Discard mixed resin that has become noticeably viscous or warm.

WARNING

Do not mix more resin than can be consumed within the pot life. Exothermic reaction accelerates in large volumes — mix in small batches only.

5. FABRIC PREPARATION

5. **Cut fabric to size** — Measure and cut the carbon fiber fabric to the designed dimensions using heavy-duty scissors or a sharp fabric cutter. Use clean, straight cuts to maintain fiber integrity.
6. **Avoid dull tools** — Do not use dull cutting instruments. Frayed or damaged edges weaken fiber alignment and reduce system performance.

6. APPLICATION PROCESS

7. **Priming (optional)** — Where specified, apply FSE302 epoxy primer to the prepared substrate by spraying, brushing or rolling. Allow the primer to cure until it reaches a slightly tacky, touch-dry state before applying the saturating resin.
8. **Apply impregnation resin** — Apply a uniform coat of FSE322 saturating resin to the substrate using a roller or brush. If no primer is used, apply FSE322 directly to the prepared surface. Ensure complete and even coverage.
9. **Place fabric** — Starting from one end, carefully place the pre-cut carbon fiber fabric onto the wet resin surface. Smooth with a plastic laminating roller, working from the centre outward to eliminate air pockets and ensure full saturation of all fibers.
10. **Multiple layers** — For multi-layer applications, apply an additional coat of FSE322 over the first fabric layer. Place the next fabric layer and repeat rolling to achieve full saturation. Apply a final coat of FSE322 over the outermost fabric layer to ensure complete encapsulation.

7. CURING & PROTECTION

- Protect the installed CFRP system from direct sunlight immediately after application.
- Allow a minimum 7-day curing period — do not apply loads, impact or disturb the laminate during this time.
- At low temperatures or high humidity, curing may require more than 10 days. The surface may exhibit a slight tackiness (amine blush) which is normal and does not affect final strength.

8. FINISHING

If a cementitious top coat (plaster, render or fire protection mortar) is required over the FRP system:

1. **Apply bonding coat** — While the final epoxy layer is still tacky, apply an additional thin coat of FSE322 resin.
2. **Broadcast aggregate** — Immediately broadcast clean silica sand (0.5–1.0 mm) onto the wet resin surface to achieve a rough key for the subsequent cementitious coating.

9. QUALITY INSPECTION

1. **Visual inspection** — Examine the entire bonded area for voids, air bubbles, delamination, dry spots or exposed (unsaturated) fibers. Any defect must be repaired.
2. **Tap test** — Gently tap the surface with a coin or small hammer. A clear, sharp sound indicates good bond. A hollow or dull sound indicates delamination — mark and repair the affected area.
3. **Pull-off test** — Where specified by the structural engineer, perform adhesion pull-off tests in accordance with ASTM D7522 or equivalent standard. Minimum bond strength shall meet design requirements.

10. HEALTH & SAFETY

WARNING — PPE REQUIRED

All personnel must wear appropriate PPE at all times: chemical-resistant nitrile gloves, safety glasses, and a respirator with organic vapour cartridges in confined or poorly ventilated spaces. Avoid all skin contact with uncured epoxy resin — sensitisation may result in permanent allergic reaction. In case of skin contact, wash immediately with soap and water. Refer to individual product Safety Data Sheets (SDS) for detailed hazard information.

NOTE

This method statement provides general installation guidance. The structural engineer's design drawings and project-specific specifications shall take precedence. All design calculations shall be performed by a licensed professional engineer.