BCI BUILDING CHEMISTRY INDUSTRY

METHOD STATEMENT

FOR 4 mm GRP LINING SYSTEM

(BC GRP PRIMER + BC GRP LINE RESIN + BC GRP MATT + BC GRP LINE WHITE)

1. Purpose

This method statement provides the detailed procedure for the supply and application of a 4 mm Glass Reinforced Plastic (GRP) lining system inside concrete or steel tanks using the BC GRP Lining System.
The purpose of the system is to provide:

- Exceptional corrosion protection
- Waterproofing
- Chemical resistance
- Smooth hygienic finish
- Enhanced mechanical strength

2. References

- BCI Technical Data Sheets for all BC GRP Products
- ASTM D2563 – Standard Practice for Laminate Inspection
- ASTM D543 – Chemical Resistance of Plastics
- ISO 8501-1 – Surface Preparation for Steel
- BS 6920 – Suitability for potable water (if required)
- Approved Project Drawings & Specifications
- Local safety regulations for confined space entry

3. System Components

3.1 BC System Materials

Material	Description	Function
BC GRP Primer	Single-component primer for concrete/steel	Promote adhesion & seal surface
BC GRP Line Resin	Laminating polyester/vinyl ester resin	Binds fiberglass & forms matrix
BC GRP Matt	Chopped Strand Mat (300/450 g/m²)	Reinforcement & structural strength
BC GRP Line White	Final white topcoat	Smooth finish, UV & chemical protection

3.2 Ancillary Materials

- MEKP Catalyst (1–2% by weight)
- Thixotropic agent (if vertical surfaces require)
- Acetone for tool cleaning
- Masking tapes and protective sheets

4. Tools & Equipment

- Abrasive blasting machine / grinder

- Mechanical stirrer for resin mixing
- Resin buckets & measuring scales
- Rollers (lambswool, textured, bubble rollers)
- Brushes for detailing
- Thickness gauge (DFT gauge or destructive testing coupons)
- Spark tester (10–15 kV)
- Forced ventilation fans & lighting
- PPE (gloves, respirators, coveralls, helmets)

5. Environmental Conditions

GRP application is sensitive to temperature and humidity.

Parameter	Required Condition
Substrate Temperature	10°C – 40°C
Ambient Temperature	15°C – 40°C
Relative Humidity	< 85%
Dew Point	Minimum 3°C above substrate

No application is allowed under rain, condensation, or direct moisture contact.

6. Methodology

6.1 Surface Preparation

6.1.1 Initial Inspection

- Inspect tank surface for laitance, rust, cracks, holes, contaminants, or weak concrete.
- Mark defective areas and submit report to consultant.

6.1.2 Cleaning

- Remove oil & grease using detergent or solvent-based cleaner.

- Flush with clean water and allow to dry completely.

6.1.3 Abrasive Blasting / Grinding

For Steel Tanks:

- Blast clean to SA 2.5 finish.
- Achieve anchor profile: 40–75 µm.

For Concrete Tanks:

- Mechanical grinding to remove laitance and achieve rough profile.
- V-cut and repair cracks >1 mm.
- Remove all loose particles using vacuum.

6.1.4 Surface Repairs

- Repair voids and honeycombs using epoxy repair mortar.
- Level sharp edges that may puncture glass mat.

6.1.5 Final substrate cleaning

- Remove dust via industrial vacuum.
- Substrate must be completely dry before primer.

6.2 Priming (BC GRP Primer)

Application Procedure

1. Mix BC GRP Primer thoroughly before use.
2. Apply using roller/brush at 0.15–0.25 kg/m².
3. Ensure complete penetration on concrete and uniform wetting on steel.
4. Allow 1–2 hours drying (tack-free).
5. Surface must be slightly tacky but not wet before resin application.

If primer becomes fully dry (more than 24 hours), light sanding is required before applying resin.

6.3 GRP Lamination – BC GRP Line Resin + BC GRP Matt (4 mm System)

6.3.1 Layer Configuration

Layer	Material Combination	Target Thickness
1	BC GRP Line Resin + BC GRP Matt (CSM 300 g/m²)	0.6–0.8 mm
2	BC GRP Line Resin + BC GRP Matt (CSM 450 g/m²)	0.9–1.0 mm
3	BC GRP Line Resin + BC GRP Matt (CSM 450 g/m²)	0.9–1.0 mm
4	BC GRP Line Resin + BC GRP Matt (CSM 450 g/m²)	0.9–1.0 mm
Total	—	3.5–4.0 mm

6.3.2 Lamination Procedure

A. Resin preparation

- Add MEKP catalyst (1–2%) depending on ambient temperature.
- Mix using mechanical stirrer; avoid air entrapment.
- Pot life typically 20–25 minutes at 25°C.

B. First Lamination Layer (CSM 300 g/m²)

1. Apply resin coat over primer.
2. Place BC GRP Matt over the wet resin.
3. Use bubble roller to remove trapped air.
4. Ensure full wet-out (no white patches).

C. Successive Layers (CSM 450 g/m² × 3 layers)

- Apply each layer *wet-on-tacky*.
- Stagger joints by minimum 50 mm overlap.
- Avoid heavy resin starvation or over-saturation.
- Maintain smooth lamination with no wrinkles.

D. Edge, Corner & Detail Reinforcement

- Corners to be rounded to min. radius 20–30 mm.

- Apply additional strips of CSM on corners, joints, and pipe penetrations.

E. Repair of Defects Between Layers

- Remove sharp fibers using light grinding.
- Re-apply resin before next layer.

F. Layer-by-layer inspection

- Visually check for:
    - Air pockets
    - Dry spots
    - Wrinkles
    - Loose fiber
    - Resin pooling

6.4 Final Topcoat – BC GRP Line White

Purpose

- Protects laminate from chemical exposure
- Provides glossy washable finish
- Increases hygienic performance
- UV stable for open tanks
- Ensures color uniformity

Application

1. After final lamination cures (initial cure 6–8 hours), lightly sand if required.
2. Apply BC GRP Line White using roller/brush at 0.30–0.40 kg/m².
3. Ensure uniform glossy white finish with no pinholes.

7. Curing

- Initial cure: 6–8 hours

- Walkable cure: 12–18 hours
- Full chemical cure: 24–48 hours
- Tank commissioning: After complete curing

Temperature may increase or decrease curing time.

8. Quality Control Tests

8.1 Visual Inspection

Check for:

- Air bubbles
- Delamination
- Resin starvation
- Surface waviness
- Fiber exposure

8.2 DFT (Dry Film Thickness)

- Minimum required thickness: 4 mm ±10%
- Measure using destructive coupons or depth gauge.

8.3 Adhesion Test

(Optional if client requires)

- Concrete substrate: ≥ 1.5 MPa
- Steel substrate: ≥ 3.0 MPa

8.4 Hardness / Cure Check

- Surface must be fully hardened before filling tank.

9. Cleaning & Handover

- Clean tools using acetone.
- Remove masking tapes and debris.