CSS-CBGF424

Code-Listed Bidirectional E-Glass Fabric

DESCRIPTION

CSS-CBGF424 is a +/- 45-degree bidirectional, high-strength, noncorrosive E-glass fabric designed to be field laminated with CSS-ES saturant resin to create a glass-fiber-reinforced polymer (GFRP) composite for structural reinforcement applications. This product has been evaluated per ICC-ES AC125 for concrete and unreinforced masonry strengthening using externally bonded fiber-reinforced polymer (FRP) composite systems.

CODES

ICC-ES ESR-3403

MATERIAL PROPERTIES

Dry Fiber Properties

Tensile Strength	330,000 psi (2,300 MPa)
Tensile Modulus	10,500 ksi (72 GPa)
Elongation at Break	4.0%
Weight	24 oz./yd.^{2} (814 g/m^2)
Color	White

Cured Composite Properties[1,2]

Property	Design Value[3]
Tensile Strength	37,800 psi (261 MPa)
Tensile Modulus	2,700 ksi (19 GPa)
Elongation at Break	1.4 %
Thickness per Layer	0.034 in. (0.86 mm)

1. When laminated with CSS-ES saturating resin, cured for 48 hours at 140°F, and tested per ASTM D3039.
2. In +/- 45-degree primary fiber directions.
3. Tensile properties based on 5% fractile approach per ACI.

MADE IN USA with GLOBAL MATERIALS

PERFORMANCE FEATURES

- High-strength
- Lightweight
- Ambient Cure
- Noncorrosive
- Flexible
- Low aesthetic impact
- Various finish coatings

APPLICATIONS

Seismic Retrofit
- Shear strengthening
- Displacement/ductility
- Life safety

Load Rating Upgrade
- Increased live loads
- New equipment
- Change of use

Damage Repair
- Deterioration/corrosion
- Blast/vehicle impact

Defect Remediation
- Size/layout errors
- Low concrete strengths

Blast Mitigation
- Hardening
- Progressive collapse

STRUCTURES

- Buildings
- Bridges
- Parking garages
- Chimneys
- Piers/wharfs
- Tunnels
- Pipes

ELEMENTS

- Columns
- Beams
- Slabs
- Walls
- Piles
- Pier caps

SUBSTRATES

- Concrete
- Masonry
- Timber
- Steel

PACKAGING

Roll Size (Width x Length)	Model No.
25 in. x 150 ft. (635 mm x 46 m)	CSS-CBGF42425
50 in. x 150 ft. (1,270 mm x 46 m)	CSS-CBGF42450

SHELF LIFE

10 years in unopened, undamaged carton.

STORAGE

Store material in a dry area with no exposure to moisture.

DESIGN

The number of layers, dimensions, and detailing of CSS-CBGF424 shall be designed in accordance with ACI 440.2R or another recognized design guideline/code in order to meet the design performance specified for the application. Contact Simpson Strong-Tie engineers for design and technical support.

SURFACE PREPARATION

Repair existing substrate per ICRI Guideline No. 310.1R. Concrete shall be abrasively prepared to achieve an open pore structure and CSP-3 in accordance with ICRI Guideline No. 310.2R by means of grinding, sandblasting, shotblasting, or pressure washing. Application surfaces shall be clean, sound, and free of standing water at time of application. All dust, laitance, grease, curing compounds, and other foreign materials that may hinder the bond must be removed before installation. In some applications, such as column confinement, the engineer may determine that the installation is not bond-critical, in which case abrasive surface preparation is not required. Existing concave and convex surfaces must be filled/transitioned using CSS-EP, thickened CSS-ES epoxy or a suitable repair mortar. All corners to be wrapped around shall be rounded to a ¾" (19 mm) minimum radius using a grinder, CSS-EP or thickened CSS-ES epoxy.

APPLICATION

CSS installation shall only be performed by contractors and personnel that have been properly trained by Simpson Strong-Tie. Apply one coat of CSS-ES primer using a nap roller. Where minor surface defects are present, apply CSS-EP or CSS-ES epoxy saturant thickened with fumed silica (maximum ratio of 2 parts fumed silica to 1 part epoxy, by volume) in lifts no thicker than 1 in. (25 mm). Apply the saturated fabric before the primer and paste/thickened epoxy have cured. Sheets can be cut to required length using heavy-duty scissors. Saturate fabric mechanically or manually, ensuring that full fiber saturation is achieved. Apply the saturated sheet to the primed surface and remove entrapped air using hand pressure, rollers or trowels. Apply additional layers as necessary to meet the project requirements, ensuring each layer is in firm contact with the previous layer. Feather all seams and edges with CSS-EP or thickened CSS-ES epoxy. Allow epoxy to fully cure (approximately 72 hours at 70°F) and lightly sand epoxy before applying finish coating.

Pot Life: 1 hour at 70°F (21°C).

Cure Time: 72 hours at 70°F (21°C).

LIMITATIONS

CSS installation shall only take place when the ambient and substrate temperatures are between 45°F (7°C) and 95°F (35°C).

CAUTION

Protective Measures: The use of safety glasses and chemical-resistant gloves is recommended. Use appropriate clothing to minimize skin contact. The use of NIOSH-approved respirators is required to protect the respiratory tract when ventilation is not adequate to limit exposure below the PEL. Refer to Safety Data Sheets (SDS) available at **strongtie.com/sds** for detailed information.

FIRST AID

Eye Contact: Immediately flush eyes with plenty of water for at least 15 to 20 minutes. Ensure adequate flushing of eyes by separating the eyelids with fingers. Do not rub or scratch eyes. If eye irritation persists, seek medical advice.

Skin Contact: Wash off immediately with soap and cold water. DO NOT use warm water because this will open up the pores of the skin, which will cause further penetration of the fibers. Use a wash cloth to help remove fibers. DO NOT rub or scratch the affected areas. Remove contaminated clothing. If irritation persists, seek medical advice.

Inhalation: Move to fresh air. If symptoms persist, seek medical advice.

Ingestion: Accidental ingestion of this material is unlikely. If this does occur, rinse mouth with water and drink water to remove fibers from the throat. If after several days there is intestinal blockage, seek medical advice.

CLEANUP

Methods for Containment: This material will settle out of the air. Prevent from spreading by covering, diking or other means.

Methods for Cleanup: Use an industrial vacuum cleaner with a high-efficiency filter to clean up dust and fiber contamination. Avoid dry sweeping. Pick up and transfer to properly labeled containers.

Disposal Considerations

Waste Disposal: Dispose of in accordance with Local, State, Federal and Provincial regulations.

Contaminated Packaging: Empty containers should be taken for local recycling, recovery or waste disposal.

LIMITED WARRANTY

This product is covered by the Simpson Strong-Tie RPS Product Five-Year Limited Warranty, which is available at **strongtie.com/limited-warranties** or by calling Simpson Strong-Tie at (800) 999-5099.

IMPORTANT INFORMATION

It is the responsibility of each purchaser and user of each Product to determine the suitability of the Product for its intended use. Prior to using any Product, consult a qualified design professional for advice regarding the suitability and use of the Product, including whether the capacity of any structural building element may be impacted by a repair. As jobsite conditions vary greatly, a small-scale test patch is required to verify product suitability prior to full-scale application. The installer must read, understand and follow all written instructions and warnings contained on the product label(s), Product Data Sheet(s), Safety Data Sheet(s) and the **strongtie.com** website prior to use. For industrial use only by qualified applicators. KEEP OUT OF REACH OF CHILDREN!

⚠ **WARNING!** Cancer and reproductive harm — www.P65Warnings.ca.gov.