

# CSS V-Wrap™ CUCL

Unidirectional Carbon Laminate



## DESCRIPTION

CSS V-Wrap CUCL is an epoxy-based, pultruded, unidirectional, high-strength, non-corrosive carbon fiber reinforced (CFRP) precured laminate for structural reinforcement applications.

## MATERIAL PROPERTIES

### Cured Composite Properties

Property	Design Value <sup>1</sup> per ICC-ES AC125	Design Value per ISO 527
Tensile Strength	181,000 psi (1,250 MPa)	400,000 psi (2,800 MPa)
Tensile Modulus	23,600 ksi (163 GPa)	24,000 ksi (165 GPa)
Elongation at Break	0.8%	1.7%

1. Tensile properties based on 5% fractile approach per ACI.

## PACKAGING

CSS V-Wrap CUCL is packaged in 150 m (492 ft.) rolls, except where otherwise indicated.

Width	Thickness	Area	Model No.
10 mm (0.39 in.)	1.4 mm (0.055 in.)	14 mm <sup>2</sup> (0.021 in. <sup>2</sup> )	CV-CUCL114-RL
10 mm (0.39 in.)	2.8 mm (0.110 in.)	28 mm <sup>2</sup> (0.043 in. <sup>2</sup> )	CV-CUCL128-RL*
20 mm (0.79 in.)	1.4 mm (0.055 in.)	28 mm <sup>2</sup> (0.043 in. <sup>2</sup> )	CV-CUCL214-RL
50 mm (1.97 in.)	1.2 mm (0.047 in.)	60 mm <sup>2</sup> (0.093 in. <sup>2</sup> )	CV-CUCL512-RL
50 mm (1.97 in.)	1.4 mm (0.055 in.)	70 mm <sup>2</sup> (0.108 in. <sup>2</sup> )	CV-CUCL514-RL
60 mm (2.36 in.)	1.4 mm (0.055 in.)	84 mm <sup>2</sup> (0.130 in. <sup>2</sup> )	CV-CUCL614-RL
80 mm (3.15 in.)	1.2 mm (0.047 in.)	96 mm <sup>2</sup> (0.148 in. <sup>2</sup> )	CV-CUCL812-RL
80 mm (3.15 in.)	1.4 mm (0.055 in.)	112 mm <sup>2</sup> (0.173 in. <sup>2</sup> )	CV-CUCL814-RL
90 mm (3.54 in.)	1.4 mm (0.055 in.)	126 mm <sup>2</sup> (0.195 in. <sup>2</sup> )	CV-CUCL914-RL
100 mm (3.94 in.)	1.2 mm (0.047 in.)	120 mm <sup>2</sup> (0.185 in. <sup>2</sup> )	CV-CUCL1012-RL
100 mm (3.94 in.)	1.4 mm (0.055 in.)	140 mm <sup>2</sup> (0.217 in. <sup>2</sup> )	CV-CUCL1014-RL
120 mm (4.72 in.)	1.2 mm (0.047 in.)	144 mm <sup>2</sup> (0.222 in. <sup>2</sup> )	CV-CUCL1212-RL
120 mm (4.72 in.)	1.4 mm (0.055 in.)	168 mm <sup>2</sup> (0.260 in. <sup>2</sup> )	CV-CUCL1214-RL*
150 mm (5.90 in.)	1.2 mm (0.047 in.)	180 mm <sup>2</sup> (0.277 in. <sup>2</sup> )	CV-CUCL1512-RL*

\*Packaged in 100 m (328 ft.) rolls.

## PERFORMANCE FEATURES

- High strength
- Lightweight
- Noncorrosive
- NSM applications
- Low aesthetic impact
- Compatible with many 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

## SHELF LIFE

10 years in unopened, undamaged packaging.

## STORAGE

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

## USAGE

### Design

The dimensions and detailing of CSS V-Wrap CUCL 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.

### 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, sand blasting, shot blasting, 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. Existing concave and convex surfaces must be filled/transitioned using CV-PF epoxy putty filler or a suitable repair mortar such that the flatness varies less than 5 mm (3/16 in.) over 2 m (6.5 ft.) length.

### Application

Where minor surface defects are present, apply CV-PF epoxy putty filler in lifts no thicker than 25 mm (1 in.).

### Surface-Mounted Applications

Apply the pasted laminate before the filler paste has cured. Cut CSS V-Wrap CUCL to appropriate lengths using a metal cutting wheel and clean with solvent to remove all contaminants. Proper personal protective equipment should be worn when performing any cutting. Apply CV-PF epoxy putty filler to the laminate using a paste profiler or trowel to form a curved cross-sectional profile with paste thickness of approximately 3 mm (1/8 in.) at the middle and 1 mm (1/16 in.) at the edges. Install the laminates with the paste side against the substrate and remove entrapped air using hand pressure, rollers or trowels until paste emission becomes present. Allow epoxy putty filler to fully cure and lightly sand epoxy and laminate before applying finish coating. Take care to avoid damaging laminate fiber during sanding.

### Near-Surface-Mounted (NSM) Applications

Saw-cut a slot into the substrate per approved shop drawings. When using CV-PF, fill entire slot with the epoxy putty filler, ensuring that the slot is full of paste with no air bubbles present. Place the CSS V-Wrap CUCL oriented vertically into the slot and remove the excess paste. When using the CV-ES770, fill approximately 2/3 of slot with the epoxy saturant. Place the CSS V-Wrap CUCL oriented vertically into the slot and add additional saturant to fill the slot, if necessary.

### Limitations

CSS V-Wrap CUCL installation shall only take place when the ambient and substrate temperatures are between 40°F (4°C) and 100°F (38°C).

## CAUTION

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

## FIRST AID

**Skin:** Wash fibers off skin with water and soap. If fibers are embedded in the skin, remove with tweezers. Discard clothing that may contain embedded fibers. Seek medical advice if exposure results in adverse effects.

**Eyes:** Immediately flush with a continuous water stream for at least 20 minutes. Washing immediately after exposure is expected to be effective in preventing damage to the eyes. Seek medical advice.

**Inhalation:** If there is inhalation exposure to the fibers of this product, remove source of exposure and move patient to fresh air. If affected person is not breathing, give artificial respiration. If there is breathing difficulty, give oxygen. Seek medical advice for any respiratory problems.

**Ingestion:** Not expected to occur since ingestion is not a likely route of exposure for this product. If ingestion does occur, DO NOT INDUCE VOMITING. Give nothing by mouth if affected person is unconscious. Seek medical advice.

## CLEANUP

### ENVIRONMENTAL PRECAUTIONS

**Spill/Release and Cleanup Procedures:** In case of spill, collect (e.g., sweep up, vacuum, etc.) spilled material and either reuse or dispose of properly. Chopped or milled carbon fibers may be slippery if spilled posing an accident risk. Wear personal protective equipment as described in the SDS during cleanup activities.

## 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](http://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](http://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](http://www.P65Warnings.ca.gov).