

# Carbon Fiber Reinforced Polymer [CFRP] Mesh Wrap System is Longitudinal & Latitudinal Data Fabric Type

**Pioneer in CFRP,  
Smart & Clever for Composites**

**Structural Strengthening  
Building & Civil Engineering  
[Column, Beam & Slab]**

**Timber Strengthening**

**Masonry Strengthening**

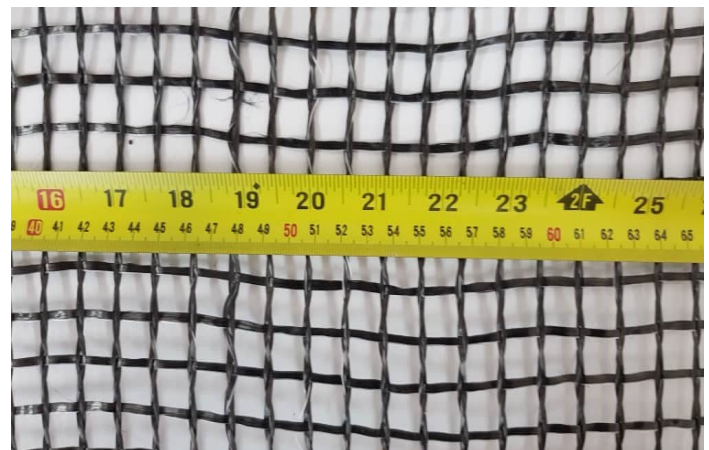
**Build Mesh CF**

**Weight of Fiber\*Gap\*Wide Products List**

- 200g/m<sup>2</sup> [gap 20\*20mm] x 1.50m x 100/m roll
- 300g/m<sup>2</sup> [gap 10\*10mm] x 1.50m x 100/m roll
- 400g/m<sup>2</sup> [gap 8\*8mm] x 1.50m x 100/m roll



**Build Mesh CF 20020, 30010 & 40008**



**Build Mesh CF 20020, 30010 & 40008**



**Install of Build Mesh CF on Void Holes**



**Install on Build Mesh CF 30010 on Wall**

**Carbon Fiber Mesh,  
is Longitudinal & Latitudinal Data Fabric Type  
Carbon Fiber Weight Content, 200, 300 & 400 gm/m<sup>2</sup>  
For Reducing of [Micro Concrete/Grout/Mortar/Shotcrete] Thickness  
Strengthening System for Tunnel & Building Works**

### Build Mesh CF®

Is a mesh fabric sheet system of longitudinal & latitudinal oriented, continuous carbon fiber filaments which are held in position by a lightweight, open spacing gap 8mm to 20mm mesh. **Build Mesh CF®** has robust handling and rapid wet-out characteristics which make it ideal for on-site strengthening of structural of structure reducing of the concrete reinforced thickness, for tunnels or buildings, bridges & marine structures. Additionally, **Build Mesh CF®** is compatible with all commonly used resin systems which can be applied using a variety of wet-out/resin infusion techniques.

### Property of Products Specification

Product Name & Specification	Weight of Carbon Fiber Mesh Fabric [gm/m <sup>2</sup> ]	Gap of Mesh Fabric [mm]	Width of Mesh Fabric [mm]	Roll Length [m]
<b>Build Mesh CF 20020</b> Longitudinal, 12K Carbon Fiber Latitudinal, 12K Carbon Fiber	200	20 x 20	1500	100
<b>Build Mesh CF 30010</b> Longitudinal, 12K Carbon Fiber Latitudinal, 12K Carbon Fiber	300	10 x 10	1500	100
<b>Build Mesh CF 40008</b> Longitudinal, 12K Carbon Fiber Latitudinal, 12K Carbon Fiber	400	8 x 8	1500	100

### Specification Properties Data Sheet

#### “Build Mesh CF®” - Carbon Fiber Filament Yarn [Actual Dry Fiber] Properties

Typical of Carbon Fiber Properties	SI / Units UK design		US / Units US design	
Tensile Strength	<b>4,900</b>	Mpa	<b>710,500</b>	psi
Tensile Modulus	<b>230-235</b>	Gpa	<b>32.80 x 10<sup>6</sup></b>	psi
Ultimate Elongation	<b>1.80</b>	%	<b>1.80</b>	%
Density	<b>1.79</b>	g/cm <sup>3</sup>	<b>0.0646</b>	Ib/in <sup>3</sup>
Cross-Sectional Area per Filament	<b>0.43</b>	mm <sup>2</sup>	<b>6.63 x 10<sup>-4</sup></b>	in <sup>2</sup>
Approximate Yield (12K)	<b>1.31</b>	m/g	<b>1,950</b>	Ft/Ib
Filament Shape	<b>Round</b>		<b>Round</b>	
Filament Diameter	<b>6.7</b>	µm	<b>0.265</b>	mil
Weight/length	<b>0.765</b>	g/m	<b>42.8 x 10<sup>-6</sup></b>	Ib/in

### Specification Physical Properties

Product Name	Weight Carbon Fiber gm/m <sup>2</sup>	Reduced of Micro Concrete Thickness [%]	Increase of Tensile Load [kN]	Increase of Compression Load [kN]
<b>Build Mesh CF 20020</b>	200	40-60%	40-75%	45-100%
<b>Build Mesh CF 30010</b>	300	40-60%	40-75%	55-100%
<b>Build Mesh CF 40008</b>	400	50-75%	40-80%	65-100%

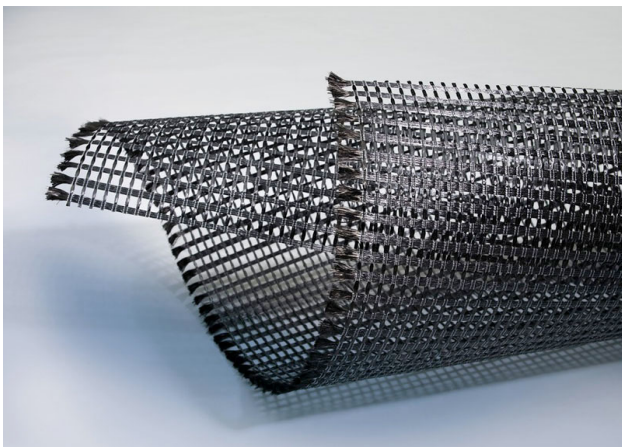


Photo of Build Mesh CF

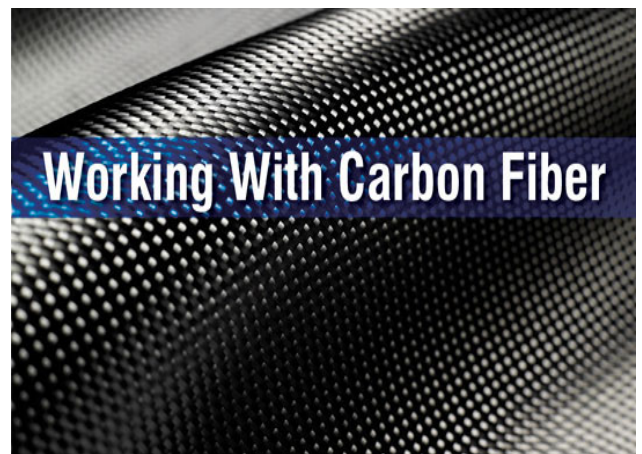


Photo of Build Mesh CF



### Install of Build Mesh CF 40008

For Reducing of Micro Concrete or Microgrout or Shotcrete Thickness, it from 150mm reduced until 45mm Thick



### Install of Build Mesh CF 40008

For Reducing of Micro Concrete or Micro grout or Shotcrete Thickness, it from 150mm reduced until 45mm Thick



### Install of Build Mesh CF 40008

For Reducing of Micro Concrete or Microgrout or Shotcrete Thickness, it from 150mm reduced until 40mm Thick

### Application Method

#### **Surfaces Preparation**

Reinforced concrete surfaces shall be clean, structurally sound and free from foreign materials, contaminants, oily and other debris. Concrete surfaces shall not be more than 4% moisture content and the temperature of the substrate must be at least 3°C or and above the current dew point temperature.

Use patching method of Polymer Cementitious Mortar or pumping of High Strength Cementitious Grout. But only for concrete surfaces cracks 0.25mm, must be injected with Low Viscosity of Epoxy Resin to be filled. Using high pressure Air-Less Pump for injecting, and penetration into structural crack lines, to achieve load bearing and adhesion bonding system.

Once patched, pumped or injected, before laying Carbon Fiber Mesh Fabric System, all surfaces must be Hammer Tested for Polymer Cementitious Mortar, High Strength Cementitious Grout and Pull-Off Test for Cracks Lines. For achievement of strength requirement please consult your local Engineer.

#### **Over Head Application**

#### **Vertical Application**

Applied on Over Head or Vertical Beam and Slab, either Primer, Adhesive & Resin, Waste of materials are approximately 15%.

#### **IMPORTANT**

**All reinforced structural corners must be rounded to a radius of at least 15mm, before laying the Carbon Fiber Mesh Fabric System.**

#### **Mixing of Primer**

Use a low speed (300 to 500 rpm) electric drill fitted with a paint mixer or a wing type paddle Pour one unit of Part A & B into drum and mix for at least 3 minutes until the mix is uniform and free. (Note: Once been mixed, the Primer must be applied within 30 minutes of Pot Life).

#### **For Uneven Surfaces**

#### **Mixing of Paste Putty**

Use a low speed (300 to 500 rpm) electric drill fitted with a paint mixer or a wing type paddle. Pour one unit of Part A & B into drum and mix for at least 5 minutes until the mix is uniform and free. (Note: Once have been mixing, the Paste Putty must be applied within 60 minutes of Pot Life).

#### **Mixing of Resin Wrap**

Use a low speed (300 to 500 rpm) electric drill fitted with a paint mixer or a wing type paddle. Pour one unit of Part A & B into drum and mix for at least 3 minutes until the mix is uniform and free. (Note: Once have been mixed, the Epoxy Resin or Polyurethane Resin must be applied within 60 minutes of Pot Life).

#### **System Recommended**

#### **Use Resin Component**

**Epo Resin Wrap** is Epoxy Solvent Free (Bisphenol-F)

Two Component of Part A & Part B.

Suitable for applying on Over Head or Vertical or Horizontal Surfaces

**Easy Installation** The easy to use Carbon Fiber Mesh Fabric system components assure fast, user friendly installation. A complete system is installed in only six (6) steps to properly prepared surfaces within appropriate working conditions.

### 1. Preparation of Structure, Level the Un-even Surfaces with "Cem Strength"

Apply **Cem Strength**, at rate applied 2 kg/m<sup>2</sup> to 12 kg/m<sup>2</sup>, polymer cementitious mortar is a material that is applied using a squeegee or trowel to level uneven concrete surfaces. (Curing time: ½ hour to 4 hours depend of whether temperature)

### 2. Roll "Epo Bond Primer"

Apply **Epo Bond Primer**, applied at rate 0.20 kg/m<sup>2</sup> to 0.30 kg/m<sup>2</sup>, and applied using a roller. (Curing time: 2-4 hours)

### 3. Apply First Coat of "Epo Resin Wrap"

Apply **Epo Resin Wrap**, applied at rate 0.25 kg/m<sup>2</sup> to 1.00 kg/m<sup>2</sup>, and is a high solids Epoxy Based Resin that can be applied using a roller to begin saturation of the fiber reinforcement sheet. (Curing time: ½ hour to 4 hours depend of whether temperature)

### 4. Apply Carbon Fiber Mesh Fabric of "Build Mesh CF"

The backbone of the Carbon Fiber composite strengthening system, **Build Mesh CF** carbon fiber mesh fabric sheet, to be placed into the first layer of wet saturated and backing paper is removed. During the laying of Carbon Fiber Mesh Fabric Sheet, Keep the fiber direction properly.

### 5. Apply Second Coat of "Epo Resin Wrap"

Apply **Epo Resin Wrap**, applied at rate 0.25 kg/m<sup>2</sup> to 1.00 kg/m<sup>2</sup>, and is a high solid Epoxy Based that can be applied using a roller to begin saturation of the fiber reinforcement sheet. (Curing time: ½ hour to 4 hours depend of whether temperature)

### 6. Note: Apply Optional Topcoat

Where required, the Carbon Fiber high solids, high gloss, corrosion-resistant topcoat provides a protective/aesthetic outer layer. (Refer to Manufacture)

*In the case of two layers and several layers of "Build Mesh CF". For multiple plies repeat steps 3, 4 and 5. All direction of fiber overlapping must be at least 100mm*

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**Health & Safety** Some of the components of this product may be hazardous during mixing and application. Please consult the relevant Health & Safety Data Sheets, available from **LAMACO Malaysia** on request and sent with each delivery.

## LAMACO SYSTEM SDN BHD

Co. No. 1033557-M

407, Jalan Perusahaan 6, Taman Bandar Baru Mergong,  
05150 Alor Setar, Kedah. Malaysia

Tel : +60-4-734 5555 Fax : +60-4-772 4444

Http : [www.lamaco.com](http://www.lamaco.com) Email : [info@lamaco.com](mailto:info@lamaco.com)



: +60 19 4486611 +60 19 4786611



### Epo Resin Wrap®

#### **Epoxy Resin Properties of Specification (Liquid Based: Solvent Free)**


<b>Compressive Strength</b>	<b>DIN 53454</b>	50 N/mm <sup>2</sup>
<b>Flexural Strength</b>	<b>DIN 53452</b>	37 N/mm <sup>2</sup>
<b>Tensile Strength</b>	<b>DIN 53455</b>	80 N/mm <sup>2</sup>
<b>Bonding Strength</b>		Excellent bond to structural
<b>Tension Elongation at Break</b>		6%
<b>Solid Volume</b>		100% High Solid Resin
<b>Viscosity at 25 °C</b>		40000-60000 (±550) mPa.s
<b>Density at 25 °C</b>		1.02 g/cu. cm
<b>Pot Life at 25 °C</b>		> 45 minutes until 60 minutes
<b>Cure Time at 25 °C</b>		As pot life test method
<b>Specific Gravity</b>		1020 g/liter
<b>Flash Point</b>		> 200 °C
<b>Tear Resistance</b>		Excellent on External & Internal Layer
<b>Abrasion Resistance</b>		10 sec/1000 cycle, 0.01% Peeling of on Top Surfaces
<b>Fire Resistance</b>		Burning Test, Good Conditions of Class 0
<b>Coverage Thickness</b>		0.50 kg to 1.20 kg/m <sup>2</sup>
<b>Stability Under Heat</b>	<b>DIN 53458</b>	70 °C
<b>Glass Transition Temp</b>	<b>DIN 53445</b>	90 °C
<b>Shore A Hardness</b>		None
<b>Shore D Hardness</b>	<b>DIN 53505</b>	82-86%
<b>Packing</b>		2 kg pack, 5 kg pack & 10 kg pack



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 Http : [www.lamaco.com](http://www.lamaco.com) Email : [info@lamaco.com](mailto:info@lamaco.com)

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### Epo Bond® Primer

#### Properties of Specification

	<b>Test Result</b>	<b>Cured Coating</b>
<b>Compressive Strength</b>	<b>DIN 53454</b>	48 N/mm <sup>2</sup>
<b>Flexural Strength</b>	<b>DIN 53452</b>	36 N/mm <sup>2</sup>
<b>Tensile Strength</b>	<b>DIN 53455</b>	72 N/mm <sup>2</sup>
<b>Bonding Strength</b>		Excellent bond to structural
<b>Tension Elongation at Break</b>		2%
<b>Solid Volume</b>		100% High Solid Resin
<b>Viscosity at 25 °C</b>		3500 (±250) mPa.s
<b>Density at 25 °C</b>		1.02 g/cu. cm
<b>Pot Life at 25 °C</b>		> 25 minutes until 60 minutes
<b>Cure Time at 25 °C</b>		Dust-dry Time: 1.5 hours      Full Cured: 4 hours
<b>Specific Gravity</b>		1020 g/liter
<b>Flash Point</b>		> 200 °C
<b>Tear Resistance</b>		Excellent on External & Internal Layer
<b>Abrasion Resistance</b>		10 sec/1000 cycle, 0.01% Peeling of on Top Surfaces
<b>Fire Resistance</b>		Burning Test, Good Conditions of Class 0
<b>Coverage Thickness</b>		0.15 kg to 0.50 kg/m <sup>2</sup>
<b>Stability Under Heat</b>	<b>DIN 53458</b>	70 °C
<b>Glass Transition Temp</b>	<b>DIN 53445</b>	90 °C
<b>Shore A Hardness</b>		None
<b>Shore D Hardness</b>	<b>DIN 53505</b>	75%
<b>Packing</b>		2 kg pack & 5 kg pack



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