

# UD Carbon Fiber Fabric



Carbon fiber not only has high strength and high elastic modulus, but also possesses the characteristics of light self-weight and high durability. First, it was adopted for the aerospace and auto industry applications, followed by the sporting goods and machinery industries. In recent years, as the substitute of reinforcing materials in concrete structures, it has been widely used for seismic strengthening of highway structures, railway and bridge piers, tunnels, and buildings. Currently, it is being explored for structural modifications of highway bridges for increase in traffic volume.

## ▲▲ Advantages of the High-Quality HM Carbon Fiber

- Produced from high-quality international aviation grade yarn, every carbon fiber yarn length kept over 5000 meters to ensure the continuity of the carbon fiber fabrics without damage raw fiber.
- Five world leading Germany imported intelligent production line. Point to point active waving insertion, no damage or break of filament during the whole production process.
- Independently developed constant tension system, ensures every bunch of raw fiber is kept under constant tension. With low dispersion, high strength, stable properties, the qualification rate by national authority testing organization is 100%.
- The carbon fiber fabric is woven evenly and smooth, moderate soft, good suitability with the impregnated adhesive, which are easy to impregnate. The total adhesive usage is just 15%, less than products by other manufacturers, and the void issues maintained at 80% less than other products.
- Annual production capacity of quality carbon fiber fabric is 5 million square meters, while maintaining a daily stock of over 100,000 square meter to meet any project's demands, around the world.

## ▲▲ Product Characteristics

- Light self-weight: (1) allows operation in a narrow and tight spaces, (2) minimal impact on the normal use of the structure during construction, and (3) adds almost no additional weight to the existing structure.
- High strength, high modulus: Very effective in flexural strengthening in the form of straight sheets, shear strengthening in the form of closed loop wrapping, U-shaped and side bonding, increase ductility and strength of circular columns in the form of transverse wrapping, and restoration of various complex shape structural elements.
- Suitable for surface of various structural components (beams, columns, ventilation tubes, pipes, walls, etc.).
- Anti-acid alkali and other chemical corrosion and resistance to severe environments.
- Long storage life: allows for long operation projects and extended deadlines.
- It could be used on various types of structural components and systems, e.g. concrete structures, masonry structures, wood structures, steel structures, and many other structural elements and systems.
- High temperature resistance, creep resistance under high permanent loads, high corrosion resistance and excellent seismic strengthening system.



### ▲▲ Application Range

→→ Load increase as a result of

1. Increase in loads in commercial buildings
2. Increase in traffic weight and volume on bridges
3. Installation of heavy equipment in industrial facilities
4. Increase of vibration in structures
5. Change in building function/use

→→ Improve structural condition

1. Reduce deformations
2. Reduce stresses in existing structural elements
3. Limit or arrest crack propagation

→→ Seismic retrofitting

1. Columns wrapping reinforcement for improving ductility and shear strength
2. Masonry walls reinforcement for improving out-of-plane bending and in-plane shear strengths
3. Beam and slab reinforcement

→→ Change structural system (structural alterations)

1. Change the location of wall and/or column
2. Cut-out floor slab opening

→→ Aged and damaged structures

1. Aging of old deteriorated construction materials
2. Corrosion of steel bars in concrete
3. Vehicles collision impact on structures (impact damage)

→→ Structural deficiencies due to design or construction errors

1. Lack of adequate well-detailed reinforcing bars
2. Inadequate member cross section
3. Substandard concrete material strength

### ▲▲ Technical Parameters

Model	Specification	Strength Grade		Thickness
		High Strength Grade I	High Strength Grade II	
HM-20	200g/m <sup>2</sup>	High Strength Grade I	High Strength Grade II	0.111mm
HM-30	300g/m <sup>2</sup>	High Strength Grade I	High Strength Grade II	0.167mm
HM-43	430g/m <sup>2</sup>	High Strength Grade I	High Strength Grade II	0.240mm
HM-45	450g/m <sup>2</sup>	High Strength Grade I	High Strength Grade II	0.250mm
HM-53	530g/m <sup>2</sup>	High Strength Grade I	High Strength Grade II	0.294mm
HM-60	600g/m <sup>2</sup>	High Strength Grade I	High Strength Grade II	0.333mm
Width: 100mm, 150mm, 200mm, 250mm, 300mm, 500mm, other width can be customized.				
Weave: Unidirectional				
Color: Black				

### ▲▲ Performance Indexes

Project Name	Grade I Technical Properties	Grade II Technical Properties
Standard Value of Tensile Strength (ASTM D3039) (MPa)	4100	3400
Tensile Elastic Modulus (ASTM D3039) (MPa)	2.4 × 10 <sup>5</sup>	2.2 × 10 <sup>5</sup>
Elongation at Break (ASTM D3039) (%)	1.6	1.5
Flexural Strength (ASTM D7264) (MPa)	1000	900
Shear Strength (ASTM D2344) (MPa)	80	70
FRP to Concrete Bonding Strength (MPa)	≥2.5, concrete cohesion failure	
Density (g/cm <sup>3</sup> )	1.8	

### ▲▲ Operation process

Please scan the QR code to watch the video



surface treatment



applying primer



levelling



applying epoxy resin adhesive



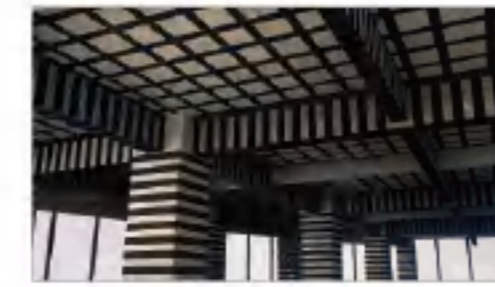
cutting carbon fiber cloth



pasting carbon fiber cloth



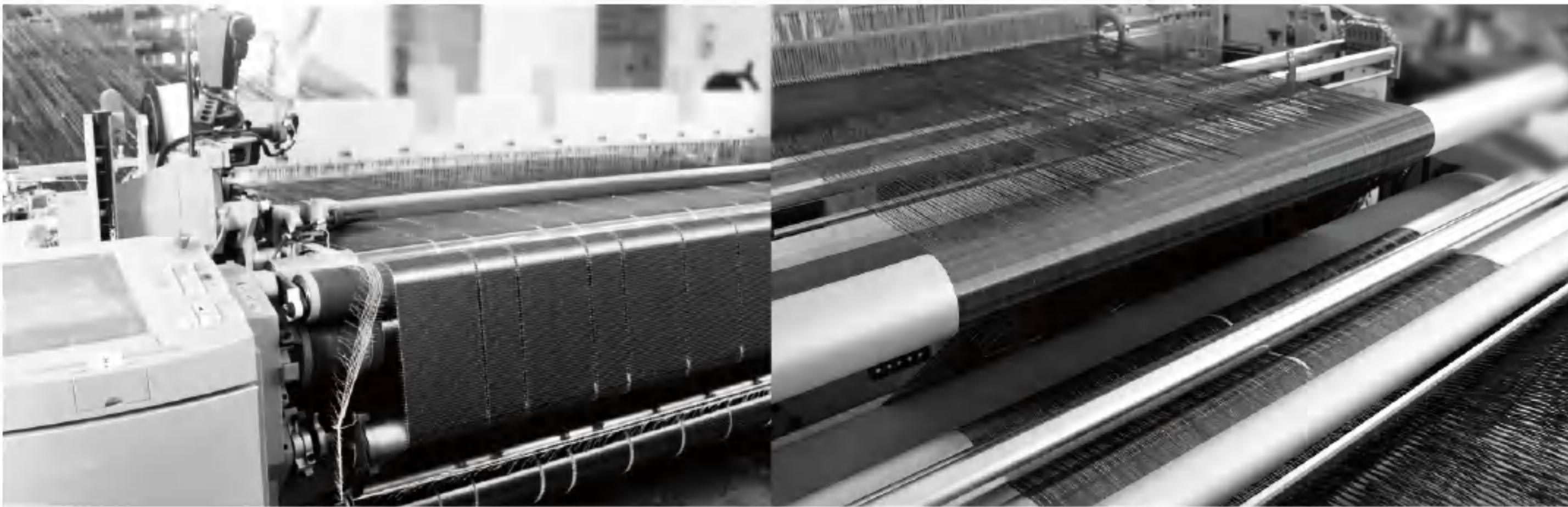
applying adhesive again



curing and protecting

### ▲▲ Package

1. For this product heavy-duty carton packages are used.
2. The total area package is 60m<sup>2</sup> for 100mm, 150mm, 200mm, 300mm width.
3. The total area package is 50m<sup>2</sup> for 250mm, 500mm width.







### ▲▲ Transportation and Storage

- This product should be stored in a dry, cool and well-ventilated environment. It should not be exposed to rain or impact by sharp objects.
- During transportation and storage, carbon fiber materials shall not be compressed or exposed to direct sunlight and/or rain.

### ▲▲ Safety Measures

- The construction workers should take all necessary protective measures (such as wearing masks, gloves, goggles, etc.).  
Safety measures should be taken on site to keep the site clean and prevent fire hazards.
- Carbon fiber is conductive, safety measures should be taken to prevent electric shocks.
- Carbon fiber sheets should not be bent during transportation, handling, and cutting process.