WONSTAR

Product Data Sheet
Edition 08.16.2024



WSD-300 WSD-200

Unidirectional Carbon Fiber Fabric For Strengthening

Description

Carbon fiber fabric is a unidirectional woven carbon fiber reinforcement product, typically made with **12K carbon fiber tow** and used in conjunction with carbon fiber impregnating adhesive. It involves adhering the carbon fiber fabric to the damaged area of the component using adhesive, ensuring that it becomes integrated with the substrate to ensure shared load-bearing capacity. By fully utilizing the excellent tensile strength of carbon fiber fabric, it aims to enhance the load-bearing capacity and functional performance of damaged components through reinforcement, thereby reducing deformation and controlling crack propagation in concrete structures.

Application Range

- **Increased load:** add heavy equipment to the building, increase the limit load tonnage of the bridge, etc
- **Structural reinforcement:** reduce component deformation, reduce/delay the occurrence of concrete cracks
- **Structural changes:** wall, column position changes, floor, wall holes
- **Seismic reinforcement:** reinforcement of columns, walls, beam and plate components
- **Structural damage:** component aging, steel bar corrosion, vehicle impact
- **Make up for mistakes:** insufficient reinforcement, insufficient structural size, insufficient concrete strength, etc

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Product Characteristic

- **Increased load:**
  It can be operated in small space, basically does not increase the weight of the component, does not change the section size of the component, and does not affect the normal use of the original building during construction.
- **High strength, large modulus**
  It can be flexibly used for anti-bending, sealing hoop and anti-shear reinforcement.
- **Good flexibility**
  It can wrap complex shape components, be freely cut, bonded and extended accordingly.
- **Convenient construction**
  Suitable for all kinds of component surface (beam, plate, column, ventilator, pipe and wall).
- **Good Durability**
  Resistant to acid, alkali and salt and other chemical corrosion and Harsh environment (non toxic itself).
- **Long shelf life**
  Long product storage life.Long period allowed for operation.
- **Wide range of application**
  Suitable for all kinds of concrete, steel structure, masonry structure, wood structure and other structural substrates.
- **High temperature resistance**
  Creep resistance and resistance under permanent load Good corrosion and seismic performance.

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WONSTAR Advantage

- **Aviation grade carbon fiber**
  The raw material adopts high-quality imported aviation grade carbon fiber wire, the tensile strength is more than 5000MPa, and the length of each carbon fiber wire is maintained above 5000 meters to ensure the continuity of carbon fiber fabric.

- **Import weaving equipment**
  The use of German Dornier looms ensures that the carbon fiber filament will not be damaged or broken during the production process.

- **Constant tension system**
  Ensure that the tension of each bundle of carbon fiber is kept constant during the production process, so as to ensure that the finished carbon fiber fabric is more flat and the pass rate is 100%.

- **Equipped with epoxy adhesive**
  Wonstar not only produces carbon fiber fabric, but also produces epoxy adhesives to ensure that carbon fiber fabric and epoxy adhesives better match.

- **Production capacity, fast delivery**
  Wonstar factory can produce 6 million square meters of carbon fiber fabric per year, with an average daily inventory of 100,000 square meters. Wonstar has a number of cooperative logistics, which can quickly ship goods around the world.

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Technical Parameters

Model	Specification	Strength Grade	Thickness
WSD-200	200 g/㎡	High Strength Grade 1	0.111 mm
WSD-230	230 g/㎡	High Strength Grade 1	0.128 mm
WSD-300	300 g/㎡	High Strength Grade 1	0.167 mm
WSD-430	430 g/㎡	High Strength Grade 1	0.240 mm
WSD-450	450 g/㎡	High Strength Grade 1	0.250 mm
WSD-530	530 g/㎡	High Strength Grade 1	0.294 mm
WSD-600	600 g/㎡	High Strength Grade 1	0.333 mm

Model: WSD-300

Appreance: Black Fabric

Length: 100m

Width: Regular width is 100mm, 150mm, 200mm, 250mm, 300mm, 500mm, other width can be customized.

Shelf life: 10 years

Storage Conditions: Store in dry conditions at 40°F to 95°F (4°C to 35°C)

Braiding: 0° (Unidirectional)

Areal Weight: 300 g/m²

Package: This product uses carton package.
When the width is 100mm, 200mm, 300mm, the total area of carbon fiber per case is 60 m²;
when the width is 250mm, 500mm, the total area of carbon fiber per case is 50 m².

Technical Parameters

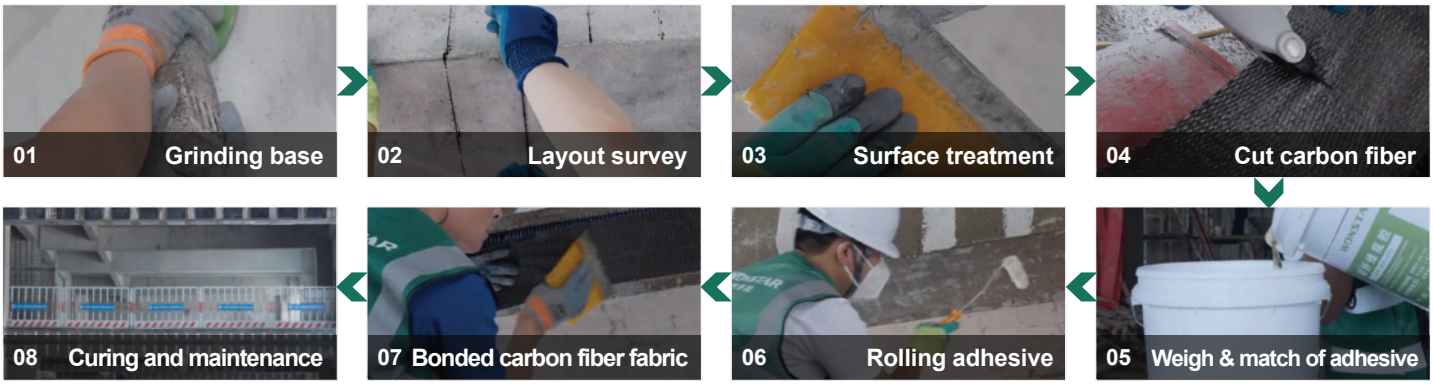
Testing Items	High Strength Level 1	High Strength Level 2
Standrad Value of Tensile Strength (MPa)	≥4900	≥4500
Tensile Elastic Modulus (MPa)	≥2.3×10^5	≥2.0×10^5
Elongation (%)	≥1.6	≥1.5
Bending Strength (MPa)	≥700	≥600
Interlayer Shear Strength (MPa)	≥45	≥35
Tensile Bond Strength (MPa)	≥2.5, and cohesive failure within the concrete	
Density (g/cm³)	1.8	

Testing Items	Carbon Fiber Impregnating Adhesive
Standard value of tensile strength (MPa)	≥38
Tensile Elastic Modulus (MPa)	2500
Elongation (%)	≥1.5
Bending Strength (MPa)	≥50
Compressive Strength (MPa)	≥70
Non-volatile (%)	99
Shear Strength of steel-to-steel (MPa)	≥20, and it is cohesive failure of the adhesive layer
Steel-steel adhesive tensile strength (MPa)	/
Steel-to-steel T-peel adhesion length（mm）	≥25
Steel-concrete Tensile Strength (MPa)	≥2.5, and it is cohesive failure of the adhesive layer in structural adhesive

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Construction Process

Please scan the QR code to watch the video ▸



01. GRINDING BASE

First of all, remove the paint layer of the component to be reinforced until the concrete surface is exposed and polished flat, and then polish the edges and corners of the component section into rounded corners, the beam radius should not be less than 20 ㎜ , the column radius should not be less than 25 ㎜ ,and ensure that the surface of the component is clean and dry.

02. LAYOUT SURVEY

Mark the pasting position of the component to be reinforced according to the design drawing and the site positioning pay-off.

03. SURFACE TREATMENT

If there are defects or cracks on the surface of the component, the defects should be repaired and leveled according to the design requirements; Before bonding the carbon fiber fabric, the leveling adhesive can also be rolled on the surface of the component to increase the strength of the component.

04. CUT CARBON FIBER

Cut the carbon fiber fabric according to the requirements of the drawing. Folding is strictly prohibited. If the fiber fabric has creases, the section with creases should be cut.

05. WEIGH AND MATCH OF ADHESIVE

According to the ratio of 2 to 1 weighing and preparation of carbon fiber impregnated adhesive, the use of a blender to stir adhesive at a low speed, in order to prevent bubbles, stir along the same direction, until the adhesive color is even and has no bubbles, and then stop stirring, the amount of adhesive should not be too much, to 1kg-2kg is appropriate, with the use, as far as possible in 30 minutes used up.

06. ADHESIVE ROLLING

After the base adhesive is dry, begin to apply carbon fiber impregnating adhesive with a roller to ensure that the area to be bonded is even.

07. PASTING CARBON FIBER FABRIC

Paste the cut carbon fiber fabric to the position of layout survey, and then use the scraper to scrape the carbon fiber fabric along the direction of the carbon wire. Ensure that the carbon fabric is laid smoothly, without folds and bends, and roll the impregnated adhesive again to ensure that the liquid is fully penetrated into the carbon fiber fabric, and is dense and uniform without bubbles.
(Multi-layer paste can repeat this step, the number of layers is generally not more than 4 layers)

08. CURING AND MAINTAINING

Before curing, the carbon fiber fabric should be checked for swelling or peeling, and if so, it should be trimmed immediately. In order not to make rain and dust adhere to the carbon fiber fabric during outdoor construction, it must be covered with plastic cloth for more than 24h for maintenance.

- **Average temperature below 10** : the initial curing time is about 2 days
- **Average temperature 10-20** : the initial curing time is about 1-2 days
- **The average temperature above 20** : the initial curing time is about 1 day
- Complete curing requires a long time, generally curing more than 80% can be stressed.
- **The average temperature is above 20** : it must be cured for 7 days
- **After 7 days, the pull test can be performed**

Transportation and Storage

It should be stored in a dry, cool and ventilated environment, avoid rain or exposure to the sun, and do not collide with sharp objects; Carbon fiber materials must not be squeezed during transportation and storage to avoid damage to carbon fiber, and must not be directly exposed to the sun or rain.

Attention

- **One-time adhesive matching should not be too much**
  The amount of one-time dispensing adhesive should not be too much, please use up within the applicable period, if it exceeds the applicable period, do not use.

- **Cautions for not using up**
  If the A and B components of the adhesive are not used up, they should be covered and sealed, and should not be exposed to the air for a long time.

- **On-site construction safety precautions and accessory equipment**
  Construction personnel should take all necessary safety measures (such as wearing masks, gloves, goggles, etc.), and keep fire prevention measures and the site clean.

- **Personal safety precautions**
  If the adhesive is accidentally stained on the skin or cloth, it can be wiped with acetone immediately and then washed with plenty of water; If swallowed or splashed into eyes, seek immediate medical attention.

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