



Horse HM-53

Unidirectional Carbon Fiber Fabric For Strengthening

Description

HM-53 is a high strength, high modulus unidirectional carbon fiber fabric. It is laminated with epoxy resin adhesive to form a carbon fiber reinforced polymer lamination (CFRP) used in structural strengthening.

Application Range

- **Load Increase:** Increase in loads in commercial buildings; Increase in traffic weight and volume on bridges; Installation of heavy equipment in industrial facilities; Increase of vibration in structures
- **Improve Structural Condition:** Reduce deformations; Reduce stresses in existing structural elements; Limit or arrest crack propagation
- **Seismic Retrofitting:** Columns wrapping reinforcement for improving ductility and shear strength; Masonry walls reinforcement for improving out-of-plane bending and in-plane shear strengths; Beam and slab reinforcement
- **Change Structural System (Structural Alterations):** Removal of walls or columns; Removal of slab sections for openings
- **Aging and Damaged Structures:** Aging of old deteriorated construction materials; Corrosion of steel bars in concrete; Vehicles collision impact on structures (impact damage)
- **Design or Construction Errors:** Lack of adequate well-detailed reinforcing bars; Inadequate member cross section; Substandard concrete material strength

Product Characteristic

- **Light self-weight:** Allows operation in a narrow and tight spaces; Minimal impact on the normal use of the structure during construction; 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; Restoration of various complex shape structural elements.
- **Wide application range:** Suitable for surface of various structural

components: Beams, columns, ventilation tubes, pipes, walls, etc.; 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.

■ **Anti-corrosion:** Anti-acid, alkali and other chemical corrosion and resistance to severe environments.

Technical Parameters

Model	Specification	Strength Grade	Thickness
HM-20	200g/m ²	High strength Grade I	0.111mm
HM-30	300g/m ²	High strength Grade I	0.167mm
HM-45	450g/m ²	High strength Grade I	0.250mm
HM-53	530g/m ²	High strength Grade I	0.294mm
HM-60	600g/m ²	High strength Grade I	0.333mm

Model	HM-53
Appearance	Black fabric
Length	50m
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	17.5 oz/sq.yd. (530g/m ²)
Package	This product uses carton package. When the width is 100mm, 200mm, 300mm, the total area of carbon fiber per case is 30m ² ; when the width is 250mm, 500mm, the total area of carbon fiber per case is 25m ² .

Dry Fiber Properties

Stand Value of Tensile Strength	4900 Mpa
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Tensile Elastic Modulus	255.53 Gpa
Elongation	1.60%

Laminated Fiber Properties

Stand Value of Tensile Strength (ASTM D3039)	4123.43 Mpa
Tensile Elastic Modulus (ASTM D3039)	232.16 Gpa
Elongation (ASTM D3039)	1.69%
Flexural Strength (ASTM D7264)	1044.15 Mpa
Shear Strength (ASTM D2344)	80 Mpa
Density	1.8g/cm ³

Construction Process

Please scan the QR code to watch the video



Surface Treatment



Apply Primer



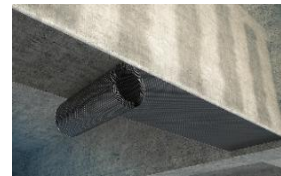
Leveling



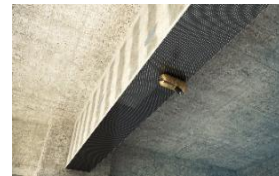
Applying epoxy resin adhesive



Cutting carbon fiber cloth



Pasting carbon fiber cloth



Applying adhesive again



Curing and protecting

- 1. Surface Preparing:** Remove the coating of concrete surface with grinder. Polishing the Surface. If there is angular, grinder it into round.
- 2. Setting out:** Get the concrete surface clean and keep it dry, then setting out.
- 3. Apply Primer:** Apply primer adhesive onto the surface of the concrete.
- 4. Apply Putty/Leveling:** Apply putty for repairing and leveling if needed.
- 5. Fabric Cutting:** Cut carbon fiber fabric into sizes as designed.
- 6. Preparing the impregnation adhesive:** Weight and mixing adhesive according to ratio. Stirring the adhesive until the color is even. Avoid air bubble in this process.
- 7. Applying Impregnation Adhesive:** Apply impregnation adhesive when primer adhesive is touch dry. (If primer is not required, impregnated adhesive can be applied directly.)
- 8. Apply carbon fiber fabric:** Apply carbon fiber fabric onto the concrete surface as designed. Leveling the surface from one end to another.
- 9. Check Gap or Bubble:** Apply impregnation carbon fiber adhesive again. Make sure the adhesive impregnate fully into the fabric. The surface flat and no air bubble. Repeat above process from cutting carbon fiber if applying two or more layers.

Transportation and Storage

This product should be stored in a dry, cool and well-ventilated environment. It should not be exposed to rain, or subjected to impact by sharp objects. During transportation and storage, carbon fiber materials shall not be squeezed or compressed, so as to avoid carbon fiber damage, and shall not be 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.

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