HORSE

NO.1 BRAND IN CHINA

BEST CHOICE FOR 99 COUNTRIES

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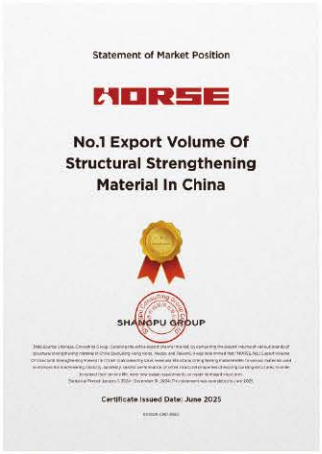
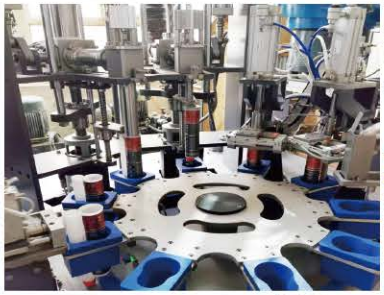
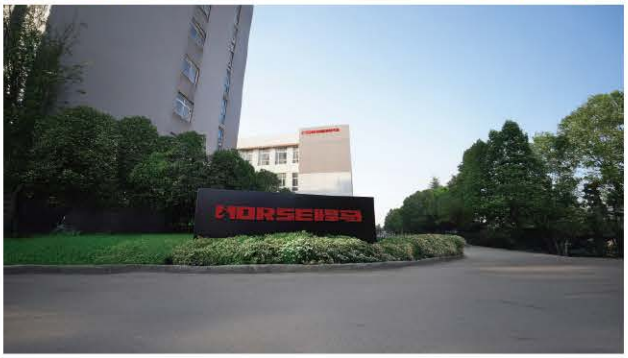






Since 2006, Shanghai Horse Construction(HM) Company has been taking a lead in research and development, manufacturing, sales and service of strengthening products and systems for various concrete elements of civil infrastructure, in general, and transportation infrastructure, in particular.

HM Company has annual production capacity of over 5 million square meters of carbon fiber fabric, and 6,000 tons of structural epoxy adhesive. It maintains daily stock of over 100,000 square meters of carbon fiber, and over 50 tons of structural epoxy adhesive.

HM CARBON FIBER FABRIC

Color	Black			
Braiding	0°(Unidirectional)			
Length	100m/roll		50m/roll	
Weight	200g/m^2	300g/m^2	600g/m^2 or to be customized	
Width	100mm	200mm	300mm	500mm or to be customized

Dry Fiber Properties

Stand Value of Tensile Strength	⩾7.1x10^5 psi (4900 MPa)
Tensile Elastic Modulus	⩾3.4x10^7 psi (235 GPa)
Elongation	⩾1.70%

Laminated Fiber Properties

Stand Value Of Tensile Strength	⩾5.51x10^5 psi (3800 MPa)
Tensile Elastic Modulus	⩾3.4x10^7 psi (235 GPa)
Elongation	⩾1.70%

Construction Process

Surface Treatment

Applying Primer

Applying Putty (Levelling)

Applying Carbon Epoxy

Preparing Fabric

Applying Fabric

Applying Carbon Epoxy Again

Curing and Maintenance

HM CARBON FIBER LAMINATE

Thickness	1.2mm	1.4mm	2.0mm	3.0mm or to be customized
Density	1.6 g/cm^3			
Packing	100 meters/roll			
Width	50mm	100mm or to be customized		

Tensile Strength	
Mean Value	4.49x10^5 psi(3100 MPa)
Design Value	3.76x10^5 psi(2600 MPa)
Tensile Elastic Modulus	
Mean Value	2.39x10^7 psi(1.65x10^5 MPa)
Design Value	2.32x10^7 psi(1.5x10^5 MPa)
Interlaminar Shear Strength	7250 psi(50 MPa)
FRP With Base Materials Bonding Strength(MPa)	For concrete and masonry;≥2.5Mpa, concrete cohesion damage
Elongation	1.70%
Temperature Resistance	>300°F(>150°C)
Fiber Volume Content	≥65%

Construction Process

Surface Preparation

Measurement and Cutting

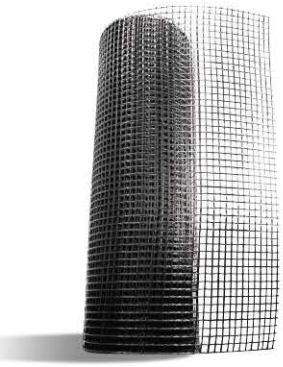
Application of Adhesive

Placement of CFRP Plates

Curing Process

Maintenance

HM CARBON FIBER MESH



Mesh Size	10x10mm	20x20mm	50x50mm or to be customized
Surface Coating	with/without epoxy coating		

Elastic Modulus	240 GPa
Reduction Factor on Clastic Modulus Due to Appication	1.5
Elastic Modulus For Design	160 GPa
Ultimate Tensile Force	150 kN/m

HM CARBON FIBER JACKET

Appreance	Black shell
Length	Customized
Diameter	Regular width is 1m, 2m or to be customized
Thickness	From 2mm - 6mm

Tensile Strength	
Horizontal	⩾550MPa
Vertical	⩾550MPa
Bending Strength	
Horizontal	⩾550MPa
Vertical	⩾550MPa
Bending Elastic Modulus	
Horizontal	⩾25GPa
Vertical	⩾25GPa

HM CARBON FIBER ROD

Tensile Strength	
Mean Value	3.19x10^5 psi (2200 MPa)
Design Value	2.90x10^5 psi (2000 MPa)
Tensile Elastic Modulus	
Mean Value	2.39x10^7 psi(1.65x10^5 MPa)
Design Value	2.32x10^7 psi(1.5x10^5 MPa)
Elongation	1.80%

Appreance	Black rod			
Length	1m		3m or customized	
Diameter	8mm	10mm	12mm	16mm or customized

HM CARBON FIBER ANCHOR

Appreance	Black string with plastic cover	
Length	25m /roll	
Diameter	5mm	10mm or customized
Physical Properties (Dry fiber) Density		1 .82 g/cm^3
Tensile Strength		4 GPa (5.8 x 10^5 lb/in^2)
E-modulus		240 GPa (3.48 x 10^7 lb/in^2)
Elongation at Break		⩾ 1.60% (nominal)

HIGH PERFORMANCE EPOXY ANCHOR ADHESIVE

Type	HM-500
Volume	390ml
Mix Ratio	3:1
Color	Red or Black
Density	1.5g/cm^3
Shelf Life	18 months

Operable Time & Curing Time

Ambient Temperature(℃)	–5	0	10	20	⩾30
Operable Time(min)	60	45	30	25	20
Curing Time(h)	72	48	24	12	6

Performance Indexes

Splitting Tensile Strength	⩾1479 psi(10.2MPa)
Tensile Strength	⩾5510 psi (38Mpa)
Tensile Modulus	⩾3.48x10^5 psi(2400Mpa)
Bending Strength	⩾8700 psi(60Mpa)
Shear Strength	⩾2320 psi(16Mpa)
Compressive Strength	⩾1.1x10^4 psi (75Mpa)

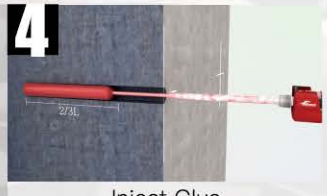
Thixotropy Index	⩾4.0
Distortion Temperature	⩾65℃
Sagging Mobility(25℃)	⩽2.0m
Bonding Strength with Concrete C60	⩾2465psi(17Mpa)
Steel-steel T Impact Stripping Length	⩽25mm
Non-volatile Matter Content	⩾99%

Construction Process

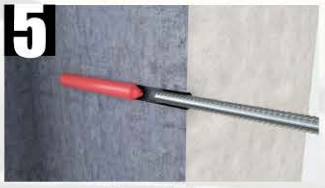
Drill Hole

Clean Hole

Blow Hole



Inject Glue



Plant Rebar

Curing

HM CRACK INJECTION ADHESIVE

Type	HM-120L	
Appearance	Liquid	
Mix Ratio	3:1	Part A：15kg Part B: 5kg

Initial Viscosity After Mixing	≤300 mPa·s
Density After Curing	1.1±0.1 g/cm^3
Tensile Strength	≥25MPa
Modulus of Elasticity	≥1.5x10^{3}MPa
Elongation	≥1.7%
Bending Strength	≥30MPa
Compressive Strength	≥50MPa
Unconstrained Linear Shrinkage Rate	≤0.3%

Construction Process

Crack Surface Prepare

Seal Ports

Air Pressure Test

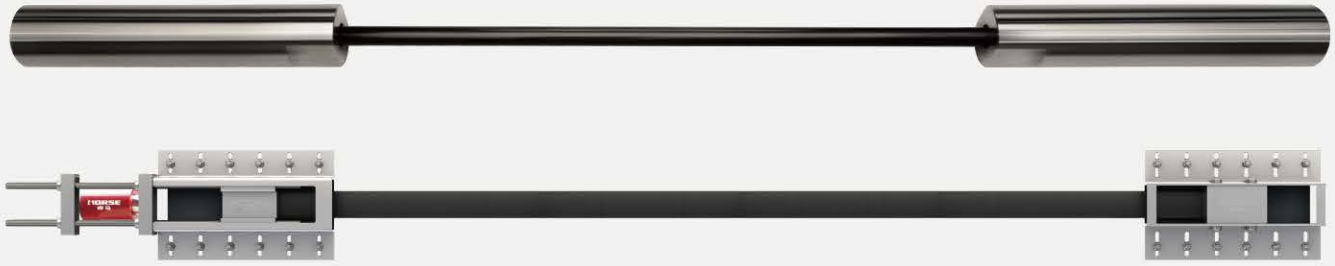
Mix Adheisve

Inject Adhesive

Inspect Quality

PATENT TECHNOLOGY PRESTRESSED CFRP SYSTEM

The CFRP pre-stressing system includes carbon fiber plate, rigid anchorages and adhesive. The anchorage system includes fixed-end (dead-end) and stressing-end (live-end) anchorages, which are fixed (bolted) to the surface of the concrete structure. The CFRP plate is held at each anchorage with clamping jaws, tensioned with hydraulic jacks, and then bonded to the concrete surface.



Application Range

Long span structures on highways, expressways, railways bridges, commercial buildings etc.

HM Carbon Fiber Laminate

Standard Tensile Strength	$\geqslant 3.48 \times 10^5$ psi (2400 MPa)
Tensile Modulus	$\geqslant 2.32 \times 10^7$ psi(1.6×10^5MPa)
Elongation	⩾1.6%
Carbon Fiber Content	⩾65%

HM Anchorage

Steel Tensile Strength	$\geqslant 5 \times 10^4$ psi (345MPa)
Stress Amplitude Difference	2.32×10^4 psi(160MPa)
2 Million Fatigue Testing F_{min}	1.6×10^5 psi(1120MPa)
2 Million Fatigue Testing F_{max}	1.86×10^5 psi(1280MPa)

Construction Process


1.Location and Setting out


2.Polish


3.Drilling Hole


4.Grooving


5.Repairing and Levelling


6.Planting Anchor


7.Installing Anchor Box


8.Installing Anchor Block


9.Fixing Carbon Fiber Laminate


10.Fixing Jack and Anchor Bolt


11.Prestretching


12.Applying Epoxy Adhesive


13.Formal Stretching


14.Removing Rod

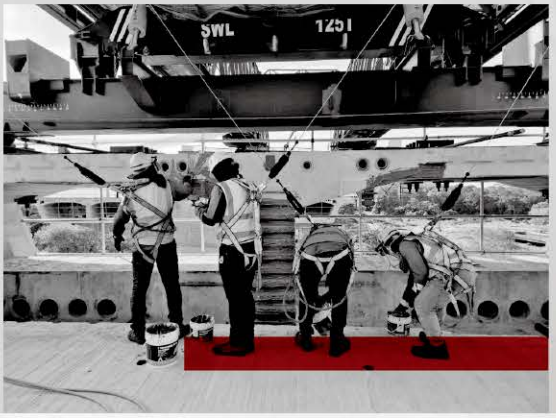

15.Tablet Fixing


16.Protection Coating

HM SEGMENTAL CONSTRUCTION ADHESIVE

Type	HM-120SC	
Appearance	Paste	
Mix Ratio	2:1	Part A: 10kg Part B: 5kg

Operable Time	⩾30min	
Bond Period	65min	
Anti Sag	⩽30mm	
Shrinkage	⩽0.04%	
HDT°C	⩾51.3	
Water Absorption	⩽0.2%	
Non-volatile Matter Content	⩾99%	
Compression Strength (MPa)	12h	⩾75
	24h	⩾100
	7days	⩾115



GLOBAL PROJECT REFERENCES 90000+

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