CCI CARBON FIBER

CARBON FIBER REINFORCED POLYMER

CYANCLAY

PRODUCT DESCRIPTION

CCI Carbon fiber is a lightweight, high-strength material that is composed of carbon atoms bonded together to form a long chain. Known for its exceptional strength-to-weight ratio, making it stronger than many metals while being much lighter. It is commonly used in various industries, including aerospace, automotive, sports and recreation, and manufacturing. Carbon fiber-reinforced composites are used in the construction of bridges, providing high strength and corrosion resistance

PRODUCT FEATURES:

- **High Strength:** Carbon fiber is known for its impressive strength. It is often used in applications where strength and rigidity are crucial, such as in the aerospace industry for aircraft components
- **Low Weight:** One of the most significant advantages of carbon fiber is its low weight. This makes it ideal for applications where weight reduction is essential, such as in the manufacturing of high-performance sports equipment and lightweight structures
- **Stiffness:** Carbon fiber is also highly stiff, providing excellent resistance to deformation. This makes it suitable for applications where rigidity is important, like in the construction of racing car chassis or bicycle frames
- **Corrosion Resistance:** Carbon fiber is not susceptible to corrosion, which makes it a durable material in various environments. This is in contrast to metals, which may corrode over time
- **Low Thermal Expansion:** Carbon fiber exhibits low thermal expansion, meaning it is less likely to expand or contract significantly with changes in temperature. This characteristic is advantageous in applications where stability is critical.
- **Electrical Conductivity:** Carbon fiber can conduct electricity. This property is sometimes utilized in applications where both strength and electrical conductivity are required
- **Aesthetic Appeal:** Carbon fiber has a distinctive appearance with a woven pattern, and it is often used for its aesthetic appeal in products like luxury car parts, watches, and consumer electronics.
- Despite its many advantages, carbon fiber also has some limitations, such as being relatively expensive compared to traditional materials like steel or aluminum. However, ongoing research and technological advancements are continually Improving the cost-effectiveness and expanding the range of applications for carbon fiber.
- In using carbon fiber, the design considerations will determine the amount, type, and orientation of carbon fiber to be used in a given structure. This is based on factors such as the desired strength, stiffness, and other mechanical properties of the final product. The design process involves calculations and simulations to optimize the use of materials, including carbon fiber, to meet the performance requirements.

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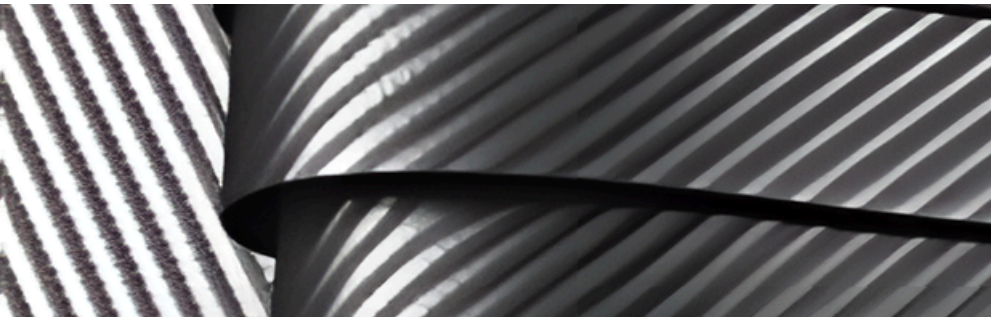

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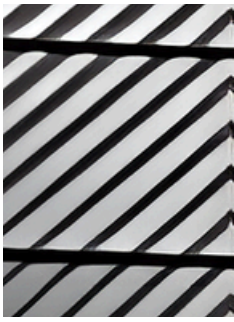

METHODOLOGY

DESIGN PHASE:

- Determine Requirements: Identify the specific properties required for the application, such as strength, stiffness, weight, and durability.
- Select the Type of Carbon Fiber: Carbon fibers come in various types, each with different properties. Choose the type that best suits the application.

MATERIAL SELECTION:

- Choose Resin: Carbon fiber is often combined with a resin matrix (such as epoxy) to form a composite material. The type of resin is selected based on factors like cure time, temperature resistance, and compatibility with the application.
- Prepare Mold: In manufacturing processes like molding or layup, a mold or form is prepared in the desired shape of the final product.
- Cut and Arrange Carbon Fiber: Carbon fiber sheets or fabrics are cut and arranged in layers according to the design specifications. The orientation of the fibers can significantly impact the material properties.

RESIN APPLICATION:

- Apply Resin: The resin is applied to the carbon fiber layers, saturating the material. This process is known as wet layup. Alternatively, pre-impregnated carbon fiber sheets (prepregs) can be used, where the resin is already impregnated into the fibers.
- Cure the Composite: The resin is allowed to cure or harden. This can be done at room temperature or in a controlled environment, depending on the type of resin used.

POST-PROCESSING:

- Trimming and Shaping: After curing, excess material is trimmed, and the final shape is achieved.
- Surface Finishing: Finishing processes, such as sanding or applying coatings, may be done to achieve the desired surface texture and appearance.

QUALITY CONTROL

- Testing: Perform quality control tests to ensure that the finished product meets the required specifications.

INTEGRATION:

- Integrate into Final Product: The carbon fiber component is integrated into the larger product, whether it's an aircraft part, a car component, a sports equipment piece, or any other application.

APPLICATION:

- Applicable to reinforcement and repair of various types of structures and structural components, such as beams, slabs, columns, roof trusses, bridge piers, bridges, barrels, shells, and other structures. Suitable for reinforcing and seismic strengthening of concrete structures, masonry structures, and wood structures in port engineering, water conservancy, and hydropower projects. Particularly suitable for the reinforcement of complex forms such as curved surfaces and nodes. The strength requirement for the base concrete is not less than C15. The construction environment temperature should be within the range of 5 to 35°C, with a relative humidity not exceeding 70%

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TECHNICAL PARAMETERS

MODEL	Strength Level	Density(g/㎡)	Thickness(mm)	Tensile Strength (MPA)	Elastic Modulus (GPA)	Elongation at Break(%)
CCI-CFRP-I-200	I	200	0.111	⩾3400	⩾240	⩾1.7%
CCI-CFRP-I-300	I	300	0.167	⩾3400	⩾240	⩾1.7%
CCI-CFRP-II-200	II	200	0.111	⩾3000	⩾210	⩾1.5%
CCI-CFRP-II-300	II	300	0.167	⩾3000	⩾210	⩾1.5%
CCI-CFRP-I-600	I	600	0.333	⩾3400	⩾240	⩾1.7%

THICKNESS:

- 200G: 0.111mm
- 300G: 0.167mm
- 600G: 0.333mm

WIDTH :

- 10cm - 100cm can be cuztomized

WEIGHT:

- 200g/m2
- 300g/m2
- 600g/m2

PACKAGING

- Carbon fiber should be stored in a dry, room temperature environment away from UV radiation.
- Keep it clean, avoid stress, and package it properly to prevent damage.
- Store rolls vertically and regularly inspect for issues.
- Follow manufacturer guidelines for specific storage instructions.

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