ZRETE Bidirectional Carbon Fiber Fabric

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1. Product Introduction

ZRETE bidirectional carbon fiber fabric is a high-performance CFRP material designed for structural strengthening of concrete members. With fibers oriented in both warp and weft directions, the fabric provides balanced reinforcement against tensile and shear stresses. When combined with structural epoxy adhesive, the CFRP system significantly improves flexural strength, crack resistance, and seismic performance. It is lightweight, easy to apply, and delivers superior durability in bridges, tunnels, buildings, and seismic retrofit projects.

2. Summary Benefits at a Glance

- Superior tensile strength and elastic modulus for maximum reinforcement
- High flexural and interlayer shear strength in composite system
- Lightweight, corrosion-resistant, easy to install on site
- Proven durability for bridges, tunnels, buildings, and seismic retrofits

3. Detailed Product Introduction

ZRETE bidirectional carbon fiber fabric delivers excellent tensile and shear reinforcement performance, making it ideal for strengthening beams, slabs, columns, and walls. Its bidirectional configuration provides balanced performance under multidirectional stresses, outperforming unidirectional systems in certain applications. Combined with epoxy adhesive, the CFRP laminate achieves high flexural strength, interlayer bonding, and long-term resistance to fatigue and environmental degradation.

4. Product Parameters

Test Item	Dry Fabric	CFRP Laminate (Fabric + Epoxy)
Tensile Strength	5500 MPa	≥ 3400 MPa
Elastic Modulus	290 GPa	≥ 2.3 × 10^5 MPa
Elongation at Break	1.8 %	≥ 1.6 %
Density	1.79 g/cm³	—
Linear Density	450 g/km	—
Flexural Strength	—	≥ 700 MPa
Interlayer Shear Strength	—	≥ 45 MPa

5. Product Usage

- Strengthening of concrete beams, slabs, columns, and walls
- Seismic retrofit of bridges, tunnels, and high-rise structures
- Flexural and shear reinforcement of infrastructure components
- Long-term durability with fatigue resistance and corrosion protection

6. Why Choose Our Carbon Fiber Wrap?

- Balanced bidirectional reinforcement, superior to unidirectional systems in multi-directional stress conditions
- Excellent adhesion with ZRETE structural epoxy adhesive for reliable composite performance

- Lightweight, easy to transport and install without heavy equipment
- Proven field performance in bridges, tunnels, marine projects, and seismic retrofits
- Supported by technical expertise, CNAS-certified testing, and global project references

7. FAQ

Q: What is the advantage of bidirectional over unidirectional fabric?

A: Bidirectional fabric reinforces in both directions, improving shear and multidirectional load resistance, while unidirectional is optimized for tensile strength in one direction.

Q: Can this fabric be used in marine or humid environments?

A: Yes. Combined with epoxy adhesive, the CFRP system offers excellent corrosion resistance, making it suitable for coastal, marine, and underground structures.

Q: How is the installation process performed?

A: Surfaces are cleaned and primed, epoxy adhesive is applied, then the carbon fiber fabric is laid, impregnated, and cured. The system is lightweight and easy to handle.

Q: What certifications support this product?

A: ZRETE CFRP systems are tested in accordance with international standards, with mechanical properties verified by CNAS-certified laboratories.