



# E6 310S

## 缠绕用直接无捻粗纱

### Direct Roving for Filament Winding

#### 产品说明 Product Description

310S 直接纱无捻粗纱采用 E6 玻璃配方生产，表面涂覆硅烷基浸润剂，专为增强环氧树脂而设计，适用于内退型或外退型使用的缠绕工艺。

310S 产品与环氧树脂复合后，其制品具备优异的机械性能和电气性能，可用于制造空心绝缘套管、绝缘拉杆等超高压复合绝缘子，并广泛应用于发电、输电和配电等电力系统中。

310S Direct Roving is produced by using E6 glass formulation and coated with a silane-based sizing. It is specially designed for the reinforcement of epoxy resins and suitable for internal or external unwinding in filament winding processes.

The articles of epoxy resin reinforced with 310S possess excellent mechanical and electrical properties, and can be used to produce hollow insulation bushings, insulation rods and ultrahigh voltage composite insulators for power generation, transmission and distribution applications.



#### 产品特点 Product Features

- ◎ 适合高速、高张力纤维缠绕工艺
- ◎ 可用于直接外退型使用工艺
- ◎ 优异的电气性能，机械强度高
- ◎ 优异的耐化学腐蚀性

·Suitable for high-speed and high-tension winding

·Suitable for external unwinding

·Excellent electrical properties and mechanical properties

·Excellent chemical corrosion resistance

#### 规格代号 Specification

|  |                  |            |      |
|--|------------------|------------|------|
| 玻璃类型<br>Glass type                       | E6               |            |      |
| 浸润剂类型<br>Sizing type                     | 硅烷 Silane        |            |      |
| 典型纤维直径<br>Typical filament diameter (um) | 15               | 17         | 24   |
| 典型线密度<br>Typical linear density (tex)    | 1100             | 735 / 1200 | 2400 |
| 示例<br>Example                            | E6DR17-1200-310S |            |      |

#### 技术指标 Technical Parameters

| 项目<br>Item           | 线密度偏差<br>Linear density variation | 含水率<br>Moisture content | 可燃物含量<br>Sizing content | 断裂强度<br>Breakage strength |
|----------------------|-----------------------------------|-------------------------|-------------------------|---------------------------|
| 单位<br>Unit           | %                                 | %                       | %                       | N/tex                     |
| 检测方法<br>Test method  | ISO 1889                          | ISO 3344                | ISO 1887                | ISO 3341                  |
| 指标<br>Standard range | ± 4                               | ≤ 0.07                  | 0.55 ± 0.15             | ≥ 0.40                    |

#### 机械性能 Mechanical Properties

| 机械性能<br>Mechanical properties                      | 单位<br>Unit | 实验值<br>Value | 树脂<br>Resin | 测试方法<br>Test method |
|--|------------|--------------|-------------|---------------------|
| 拉伸强度<br>Tensile strength                           | MPa        | 2450         | EP          | ASTM D2343          |
| 拉伸模量<br>Tensile modulus                            | GPa        | 81.76        | EP          | ASTM D2343          |
| 剪切强度<br>Shear strength                             | MPa        | 70.0         | EP          | ASTM D2344          |
| 强度保留率(72小时水煮)<br>Strength retention(72 hr boiling) | %          | > 95         | EP          | /                   |

以上数据为实验室针对E6DR17-1200-310S产品的具体实验值，仅供参考。

The above data are actual experimental values for E6DR17-1200-310S and to be used for reference only.

#### 使用说明 Instructions

◎ 本产品应在12个月内使用最佳，使用前应保存在原包装内。

◎ 产品使用时注意防护，避免产品擦毛、损伤等情况。

·The product is best used within 12 months after production, and should be kept in the original package before use.

·Care should be taken when using the product to prevent it from being scratched or damaged.



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#### 使用说明 Instructions

◎ 使用前调理纱线的温湿度与环境温湿度平衡，使用时对环境温湿度进行适当控制。

The temperature and humidity of the product should be conditioned to be close or equal to the ambient temperature and humidity before use, and the ambient temperature and humidity should be properly controlled during the use.

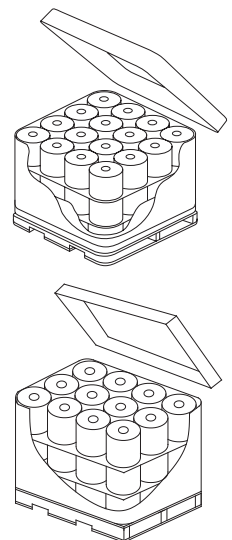
#### 包装信息 Packaging

| 项目 Item                                  | 单位 unit   | 指标 Index                     |                |              |               |
|--|-----------|------------------------------|----------------|--------------|---------------|
| 典型包装方式<br>Typical packaging method       | /         | 采用托盘包装<br>Packed on pallets. |                |              |               |
| 典型纱团高度<br>Typical package height         | mm (in)   | 260 (10.2)                   |                |              |               |
| 纱团内径<br>Package inner diameter           | mm (in)   | 160 (6.3)                    |                |              |               |
| 典型纱团外径<br>Typical package outer diameter | mm (in)   | 275 (10.8)                   |                | 305 (12.0)   |               |
| 典型纱团重量<br>Typical package weight         | kg (lb)   | 15.6 (34.4)                  |                | 22 (48.5)    |               |
| 层数<br>Number of layers                   | 层 (layer) | 3                            | 4              | 3            | 4             |
| 每层纱团个数度<br>Number of packages per layer  | 个 (ocs)   | 16                           |                | 12           |               |
| 每托纱团个数度<br>Number of packages per pallet | 个 (pcs)   | 48                           | 64             | 36           | 48            |
| 每托重量<br>Net weight per pallet            | kg (lb)   | 748.8 (1650.8)               | 998.4 (2201.1) | 792 (1746.1) | 1056 (2328.1) |
| 托盘长度<br>Pallet length                    | mm (in)   | 1140 (44.9)                  |                | 1270 (50.0)  |               |
| 托盘宽度<br>Pallet width                     | mm (in)   | 1140 (44.9)                  |                | 960 (37.8)   |               |
| 托盘高度<br>Pallet height                    | mm (in)   | 940 (37.0)                   | 1200 (47.2)    | 940 (37.0)   | 1200 (47.2)   |

#### 贮存 Storage

在没有特殊要求的情况下，玻璃纤维产品应贮存在干燥、阴凉的地方，防止受潮。最佳存储条件为温度  $-10^{\circ}\text{C} \sim 35^{\circ}\text{C}$ ，相对湿度  $\leq 80\%$ 。为确保安全，避免损坏产品，托盘的堆码高度不应超过三层。当堆放两层或三层高时，要求正确地、平稳地移动上面的托盘。

Unless otherwise specified, the fiberglass products should be stored in a dry, cool and moisture proof area. The best temperature and humidity should be maintained at  $-10^{\circ}\text{C} \sim 35^{\circ}\text{C}$  and  $\leq 80\%$  respectively. To ensure safety and avoid damage to the product, the pallets should be stacked not more than three layers high. When the pallets are stacked in two or three layers, special care should be taken to correctly and smoothly move the upper pallet.



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Add: Room 1716, Lvdi Building, Qianshan Road, Zhengwu District, Hefei City, Anhui Province, China

Tel/WhatsApp/Skype: +86 13696771864

Email: sales@tfcomposite.com

Website: www.tfcomposite.com