

## Filament Winding

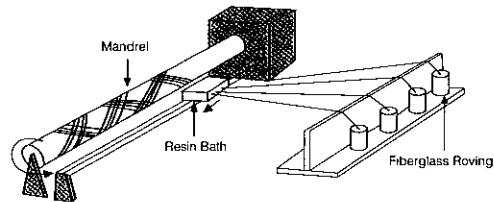
Resin-impregnated continuous strands (woven roving, mat, or impregnated roving) are wound onto a mandrel in specific patterns and then cured to form the finished products, it includes discontinuous filament winding and continuous filament winding.

## Fiberglass Products for Filament Winding

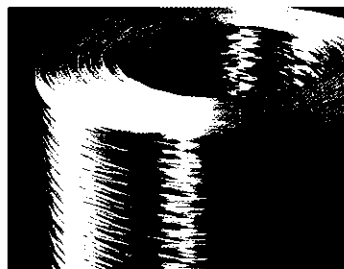
### Direct Roving for Filament Winding

#### 【 Description 】

Direct roving for filament winding is applicable for manufacturing GRP/GRE pipes of various diameters & specifications for water transportation & chemical resistance; high-pressure pipes; pressure vessels, storage tanks and insulation products. It is available with E-glass, TCR glass and S-1 HM™ glass.



Filament Winding



#### 【 Properties 】

- ◎ Silane-based sizing
- ◎ Even tension and no free loops
- ◎ High abrasion resistance and low fuzz
- ◎ Consistent linear density and high filament tensile strength
- ◎ Excellent compatibility with resins, rapid wet-out and complete impregnation
- ◎ Providing composites with excellent mechanical strength

#### 【 Identification of Product Code 】

Eg. E DR 240 - T910  
 E: E-glass  
 DR: Direct Roving  
 240: Linear Density 2400tex  
 T910: Sizing & Product Code

#### 【 Products 】

Product Code	Linear Density tex	Linear Density yield	Resin Compatibility	Typical Applications
T910	200,275,300,600, 1200,2400,4800,9600	2484,1807,1650,828, 414,207,104,52	UP & VE	Standard pressure & chemical resistant pipes, storage tanks.etc
T980	600,1200,2400, 4800,9600	825,414,207,104,52	EP	Medium & high pressure pipes, tanks and insulation products
T940H	1200,2000,2400	414,248,207	EP	High pressure pipes and tanks
T920H	1200,2000,2400	414,248,207	EP	High pressure pipes and tanks

## Chop Roving

#### 【 Description 】

Chop roving for pipes is coated with silane-based sizing, compatible with UP, VE resins and applicable for producing GRP pipe. It is available with E-glass & TCR glass.



#### 【 Properties 】

- ◎ Good chop-ability and dispersion
- ◎ Low static & fuzz
- ◎ Excellent mechanical properties of pipes

#### 【 Identification of Product Code 】

Eg. E RS 240 - T982A  
 E: E-glass  
 RS: Assembled/Multi-end Roving  
 240: Linear Density 2400tex  
 T982A: Sizing & Product Code



# TAISHAN FIBERGLASS INC.

Economic Development Zone, Taian, Shandong, P.R. China

## CERTIFICATE OF ANALYSIS

J308-410

Product Name:	SMC Roving		
Item Number:	ERS240-T959		
Test By:	Taishan Fiberglass Inc.	Sampling From:	Roving Forming Dept.
Product Code:		Product Grade:	A
Production Date:	2013.01.13-2013.01.14	Purchase Order No:	5386
Barcode Number:		Lot Capacity:	1904KGS
L/C No.			
Container No.			

### General Data:

Glass Type	E - Glass	Filament Diameter	15 μm
Density	2.6400 g/cm3 -2.6600 g/cm3	Sizing	Silane
Softening Point	840° C - 875° C	Color	White

### Properties for Control Report:

Test Items	Testing Standard	Standard Value	Average Value	result
Moisture content(%)	GB/T 9914.1-2001 idt ISO 3344: 1997	≤0.20	0.05	pass
Loss on ignition(%)	GB/T 9914.2-2001 eqv ISO 1887: 1995	1.25±0.20	1.35	pass
Stiffness (mm)	GB/T 7690.4-2001 eqv ISO 3375: 1987	80-200	158	pass
Linear density(tex)	GB/T 7690.1-2001 idt ISO 1889: 1997	2400±192	2421.3	pass
Tex Standard Deviation (%)	GB/T 7690.1-2001 idt ISO 1889: 1997	≤6	1.02	pass

Authorized Signature

### Test Conditions:

Room Temperature: 23° C

Humidity: 60 %

### Test Conclusions

Confirmed to all above specification.

I hereby certify that the results above were obtained on the material referenced according to Taishan Fiberglass Inc. test procedures and frequency.

Certified by Quality Control Laboratory

Data Operator: 刘克利 Approval By: 孙博 Date: 2013/01/15

### NOTE:

Disclaimer: The information given herein is not applicable to material graded as 'B'. The data obtained is based on the actual laboratory tests conducted either by Taishan Fiberglass Inc. or an approved laboratory and believed to be reliable information. The user is expected to test suitability of this product for the end use applications before commencing production. In no event shall Taishan Fiberglass Inc. be liable for any consequential, incidental, or indirect damages.

Barcode No.:14020938/14027063