

江苏长海复合材料股份有限公司
JIANGSU CHANGHAI COMPOSITE MATERIALS HOLDING CO.,LTD

Add: 江苏省常州市武进区遥观镇塘桥 Tangqiao, Yaoguan Town, Changzhou, Jiangsu, China
Tel: 0086-519-88708813 88708812 Fax: 0086-519-88710135 88708809
Http://www.changhaigfrp.com E-mail: mail@changhaigfrp.com



CHANGHAI
INNOVATIONS FOR YOUR BETTER LIFE

ROVING
纱



Brief Introduction 公司简介

江苏长海复合材料股份有限公司成立于 2000 年，是一家集科研、产品开发、生产、销售、服务于一体的民营科技型上市企业。

公司位于长三角极具活力和发展潜力的工业城市——常州市武进区，距常州机场 30 多公里，距常州火车站 16 公里，毗邻沪宁高速、沿江高速与 312 国道，交通极其方便。

通过多年发展与自主创新，长海玻纤在强手如林的市场竞争中脱颖而出，成为行业中的佼佼者。目前，公司已建成年产 5.5 万吨和 7 万吨的 ECR 池窑，形成了以玻璃纤维纱、玻璃纤维短切毡、湿法薄毡、涂层毡为主的四大产品系列，品种覆盖各种无碱玻纤直接纱、喷射纱、SMC 片材用纱、车顶棚用纱、透明板用纱、缠绕挤拉纱、短切毡用纱、聚丙烯复合纤维纱、热塑性短切原丝及无碱玻纤短切毡、薄毡、蓄电池复合隔板、方格布、网格布、复合毡、双轴向织物、多轴向织物与缝编毡、新型墙体保温复合贴面材料系列等。近年来，公司又引进了玻璃纤维连续毡，玻璃纤维复合防火板层压板，连续层压复合板等生产线。产品应用领域包括汽车制造、游艇、卫浴设施、储罐、管道包覆、冷却塔、透明板材、建筑装饰等。

一直以来，长海玻纤将“以质量求生存，以品种求发展”的经

营理念渗透到生产过程中的每一个环节。公司现有国际先进的多条玻璃纤维制品生产线，拥有拉力、厚度、可燃物含量等一系列高端质量检测设备和全电脑检测分析仪，保证玻纤生产的每一个环节都经过严格的检测。公司通过了 ISO9001:2000 质量管理体系认证，并获全国防水行业建设奖，被江苏省科学技术厅认定为江苏省高新技术企业；新型超细玻璃纤维复合隔板被命名为江苏省高新技术产品。2008 年公司通过 ISO14001，ISO9001,TS16946 管理体系。2011 年 3 月 29 日江苏长海复合材料股份有限公司在深圳交易所创业板上市，股票代码 300196。

长海已然成为玻纤制品行业的重要代表之一。在国内，长海以其优异的品质，得到了国内多家企业的一致认可；在国外，北美、南美、欧洲、中东、东南亚、大洋洲、非洲……多个国家和地区打上了长海的标记。长海一贯坚持“用户满意是我们永恒的追求！贴心服务是我们一贯的宗旨”的服务方针，将自己的品牌形象随着不断拓展的营销网络推广到世界各个角落。长海，将以大海一样的辽阔胸襟和深远发展眼光，从容面对未来市场变化带来的机遇和挑战，始终不渝地坚持自己的目标——“成为国内外领先的新型复合材料行业领军人物！”

Jiangsu Changhai Composite Materials Holding Co., Ltd., founded in 2000, is a large listed scientific and technical enterprise focusing on scientific research, product development, production, sales and service in the area of fiberglass products manufacture.

Through years of development and independent innovation, Changhai has been able to compete successfully in the fiberglass market and become the leader in the industry. Now, the company had successfully completed the two ECR furnace with output of 55,000 tons and 70,000 tons, the company has formed four main series of products for fiberglass roving, chopped strand mat, fiberglass tissue and coated mat, covering all kinds of E-glass roving for filament winding, spray-up roving, SMC roving, chopping roving for headliner, panel roving, roving for pultrusion, assembled Roving for Chopping, combotex roving (pp+fiberglass), chopped strands for thermoplastics and chopped strand mat, tissue, colored & printed tissue, battery separator, new insulation wall cover material, stitch combo mat, woven roving, stitch mat, biaxial fabric, multiaxial fabric, mesh and so on. In recent years, Changhai introduced the new product lines for continuous filament mat, fiberglass high pressure laminate, continuous laminated. Applications include automobile manufacturing, yachts, private facilities, storage tank, pipeline coating, cooling towers, architectural decoration, and so on.

All along, Changhai keeps its business philosophy—“survive by quality, development by variety”, to infiltrate into the production process in every link. By now, the company has several advanced glass fiber production lines. With kinds of international advanced quality testing equipments in tensile strength, thickness and binder content and computer analysis instruments, every progress of fiberglass is produced in rigorous testing. On 2008 year, the company obtained the ISO14001,ISO9001,TS16949 management system certification, and it received the awards of Construction of national waterproof industry and was identified as the high-tech enterprises in Jiangsu Province. New ultra-fine glass fiber compound separator was named the high-tech products in Jiangsu Province. On March 29,2011, Jiangsu Changhai Composite Materials Holding Co.,Ltd is listed on the Shenzhen Stock Exchange GEM, the stock code is 300196.

Changhai has become one of the important representatives in GFRP industry. Changhai has been unanimously approved by lots of countries with its excellent quality. Changhai will calmly face the future opportunities and challenges brought by market changes, and unswervingly stick to its goal—“became the domestic first and international advanced leader in new composite materials Industry!”



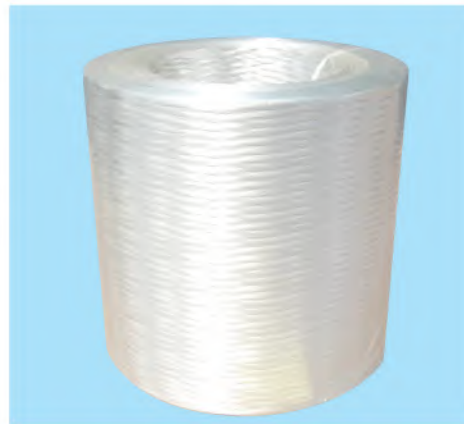
缠绕型直接纱

Roving for Filament Winding

缠绕纱与不饱和聚酯和环氧树脂相溶性好，浸透速度快，并溶于乙烯基树脂，酚醛树脂等。

缠绕纱主要用于玻璃钢管道缠绕，它通过低树脂消耗使浸透速度又快又好，并且广泛应用于航天航空、交通运输、石油、化工等领域。

The roving is compatible with polyester, vinyl ester, and epoxy resin systems. It is designed for use in FRP filament winding process. It offers rapid wet-out and wet through with low resin consumption.



产品特点 Product Features

- 不饱和聚酯和环氧树脂相溶性好
- 较好的伸展性
- 低树脂
- 浸透速度快
- 浸透完全
- Multi-compatible for polyester, vinylester and epoxy
- Excellent unwinding performance
- Low resin demand
- Rapid and complete wet out

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	适用树脂 Compatible resin	备注 Remark
906	E/ECR-GLASS	300-9600	UP,VE,PF	通用型 General Purpose
908	E/ECR-GLASS	300-9600	UP,VE,PF	通用性，柔软 General Purpose, Softer
968	E/ECR-GLASS	300-9600	EP	通用型 General Purpose

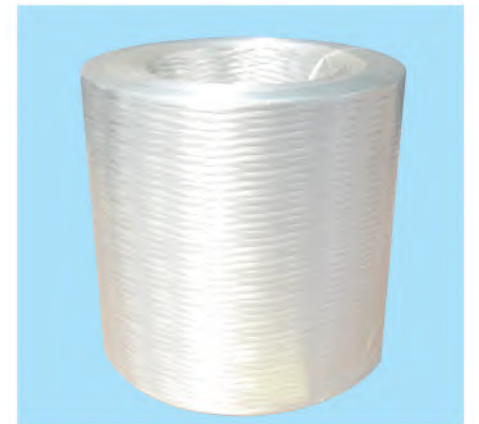


拉挤用直接纱

Direct Roving for Pultrusion

拉挤用玻璃纤维直接无捻粗纱，主要适用于增强不饱和聚酯树脂、乙烯基树脂、环氧树脂、酚醛树脂等，制品广泛应用于各个领域，如建筑、通讯等。

Direct Roving for Pultrusion is compatible with unsaturated polyester, vinyl ester, epoxy and phenolic resins, and is widely used in many fields, like building, telecommunication industry and so on..

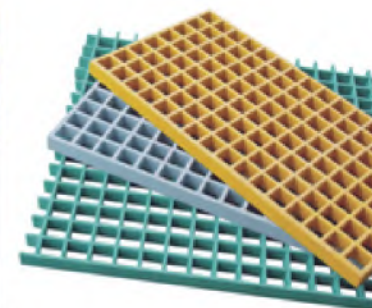


产品特点 Product Features

- 毛羽少
- 纤维分散性好
- 强度高
- 与多种树脂相容
- 抽纱张力均匀
- Minimum fuzz
- Good fiber dispersion
- High compressive strength
- Multi resin systems compatible
- Even payout tension

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	适用树脂 Compatible resin	备注 Remark
906	E/ECR-GLASS	300-9600	UP,VE	通用型 General Purpose
908	E/ECR-GLASS	300-9600	UP,VE	通用性，柔软 General Purpose, Softer
968	E/ECR-GLASS	300-9600	EP	通用型 General Purpose

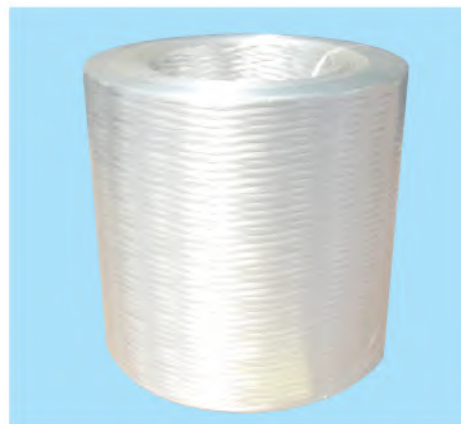


编织用直接纱

Direct Roving for Weaving

编织用玻璃纤维直接无捻粗纱，适用于增强不饱和聚酯树脂、乙烯基树脂、酚醛树脂和环氧树脂等。可用于生产玻璃纤维经编织物、风力发电叶片、船艇等。

Direct Roving for Weaving are compatible with polyester, vinyl ester, phenolic and epoxy resins. And are widely used during production of fiberglass warp knitting fabric, wind turbine blades, boats industry and so on.



产品特点 Product Features

- 毛羽少
- 工艺性能好
- 在树脂中浸透快
- 强度好
- Minimum fuzz
- Good processing characteristics
- Fast wet out in resins
- Good Tension

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	适用树脂 Compatible resin	备注 Remark
906	E/ECR-GLASS	300-4800	UP, VE, PF	织造性能好 Good Weaving Properties
908	E/ECR-GLASS	300-4800	UP, VE, PF	通用性，柔软 General Purpose, Softer
968	E/ECR-GLASS	300-4800	EP	织造性能好 Good Weaving Properties

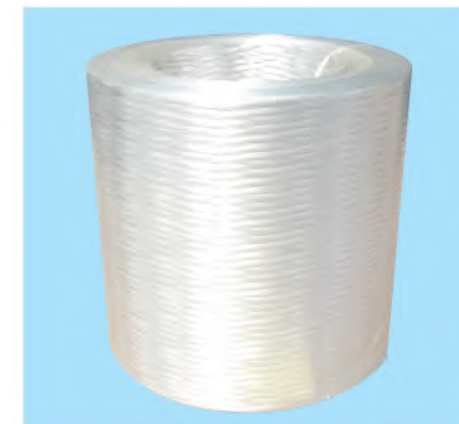


LFT 用直接纱

Direct Roving for LFT

LFT用玻璃纤维直接无捻粗纱，适用于增强改性PP、PA树脂。广泛用于汽车、建筑、包装、军工和电子等领域。

Direct Roving for LFT are designed for reinforcing PP and PA resins, and widely used in automotive, construction, packaging, military, electrical market and so on.



产品特点 Product Features

- 张力均匀
- 与树脂的相溶性好
- 工艺性能优
- Consistent tension
- Multi-compatible with resins
- Good Moulding

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	适用树脂 Compatible resin	备注 Remark
166	E-GLASS	300-2400	PP, PA	强度高，毛羽少，浸渍效果好，适合CFRP工艺 High strength, low fuzz, good wet-through, Compatible with CFRT process



喷射纱 Spray-up Roving

喷射纱是用于连续喷射工艺的增强型玻纤纱，兼容不饱和树脂。广泛应用于汽车配件，玻璃钢船体，卫生洁具，玻璃钢储藏罐，管道，冷却塔等 FRP 产品。

The roving is designed for spraying process. It is treated with silane sizing which is compatible with unsaturated polyester. The typically applications include automotive parts, FRP boat hulls, sanitary products, FRP storage tanks, pipes, cooling towers and so on.



产品特点 Product Features

- 短切性能良好
- 模压性能优良
- 气泡容易释放
- 浸透速度适中
- 分散性能良好
- Excellent choppability
- Good moldability
- Easy air release
- Moderate wet-out
- Good fiber dispersion

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	适用树脂 Compatible resin	备注 Remark
618	E-GLASS	2400/4800	UP,VE	通用型General Purpose
620	E-GLASS	2400/4800	UP,VE	机械高速High Speed Machine



SMC 片材用纱 SMC Roving

SMC 片材用纱主要是用于结构型和 A 级、表面型 SMC 片材，适用于聚酯树脂、乙烯基树脂等。应用于卫浴等各种需要光滑表面和耐水性的产品，也可以用于汽车部件，电器等结构型产品。

The roving is designed to contribute to Class "A" surface in different applications. It is suitable to be used in the automotive parts such as truck body panels, grill opening panels where smooth surface is needed. It can also be used for structural molded applications. It also contributes good laminate mechanical properties.



产品特点 Product Features

- 割性好，分散性好
- 碱性能好
- 品表面光洁，耐水性好
- 迅速的与树脂浸透和相溶，适用 UP、VE、PU 树脂
- Excellent chopability and fiber distribution
- Excellent mold flow characteristics
- Good laminate mechanical properties
- Rapid wet through and complete wet-out

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	备注 Remark
316	E/ECR-GLASS	2400/4800	通用型General Purpose



车顶蓬用纱

Chopping Roving for Headliner

车顶蓬纱是专为汽车车顶蓬生产而设计的一种增强型玻纤。适用于不饱和聚酯树脂、乙烯基树脂和聚氨酯树脂等。具有良好的纤维分散性和优良的成型特性，使顶蓬在成型过程中无褶皱及露丝现象。

It is specially designed for hot press molding automotive headliner manufacturing. It has good fiber distribution which contributes to a good finished headliner surface. It has excellent molding property so the finished headliner will not have any wrinkles.



产品特点 Product Features

- 有完整的原丝集束性和高硬度
- 有良好的短切性
- 良好的玻纤分散性
- 静电性好
- 有良好的表面外观和力学性能
- Hard strand integrity and high stiffness
- Excellent chopability
- Excellent fiber dispersion
- Very low static
- Good surface appearance with good mechanical properties

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	适用树脂 Compatible resin	备注 Remark
312B	E/ECR-GLASS	2400/4800	UP, VE, PU	车顶用 Automotive Headliner Purpose



合股型拉挤纱

Assembled Roving for Pultrusion

拉挤纱与不饱和聚酯树脂，乙烯基酯和环氧树脂相容。主要适用于缠绕、拉挤成型工艺，用于制造需要较高机械强度的产品，

如 FRP 格栅，门窗，以及帐篷支架等型材，能够满足不同客户的多种需求。

The roving is compatible with polyester, vinyl ester, and epoxy resin systems. It is designed for use in the end products which require high mechanical properties. It can be used for FRP grid, FRP windows and doors, FRP tent supporting pole.

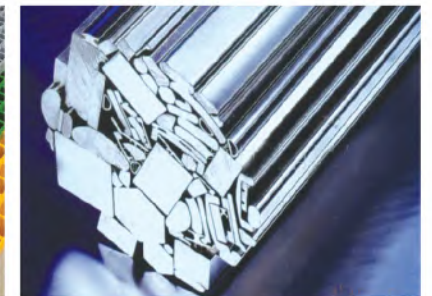
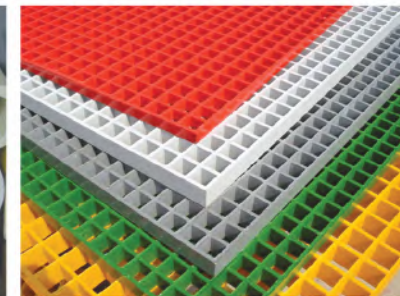


产品特点 Product Features

- 制作操作性能佳
- 毛羽少
- 强度高
- 与多种树脂相容
- Easy processing and excellent performance
- Minimum fuzz
- High compressive strength
- Multi resin systems compatible

技术参数 Technical Specification

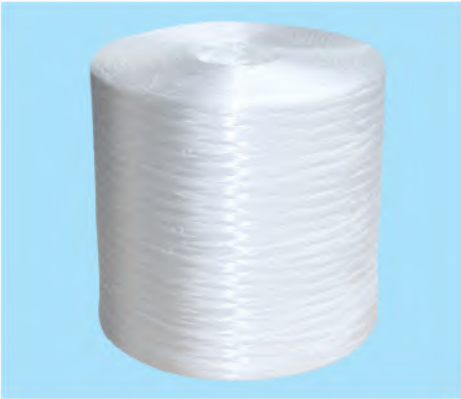
产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	单丝直径 Filament diameter(μm)	适用树脂 Compatible resin	可燃物含量 Size content (%)
902	E/ECR-GLASS	2400/4800	13-14	UP, VE	0.4-0.8



透明板用纱
Panel Roving

透明板用纱是用来生产玻纤透明板的。适用于透明板材短切、连续生产工艺。
玻纤透明板成品具有重量轻，高强度，高抗冲击性和优良的透明度。

It is designed to be used in continuous FRP transparent panel production. The finished product offers light weight, high strength, high impact resistance and excellent transparency.



产品特点 Product Features

- 具有良好的短切性和玻纤分散性
- 羽少
- 静电
- 迅速的与树脂浸透和兼容
- Good chopability and fiber dispersion
- Low fuzz
- Low static
- Fast wet through and complete wet out

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	适用树脂 Compatible resin	备注 Remark
832	E/ECR-GLASS	2400-4800	UP,VE	通用型General Purpose
832A	E/ECR-GLASS	2400-4800	UP,VE	高度透明型High Transparent Purpose



玻璃纤维短切毡用纱
Assembled Roving for Chopping

短切毡用纱适用于不饱和聚酯树脂，乙烯基树脂和环氧树脂。广泛用于制造短切原丝毡类制品和缝编复合毡。

The roving are compatible with polyester, vinyl ester and epoxy resins, principally used to produce CSM and stitch combo mats.



产品特点 Product Features

- 分散性好，纤维分布均匀
- 切割性好，毛羽少
- 抗静电性好
- 树脂浸透性好
- Good dispersion, excellent fiber distribution
- Excellent chopability, minimum fuzz
- Good anti-static property
- Good wet-out in resins

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	单丝直径 Filament diameter(μm)	适用树脂 Compatible resin	可燃物含量 Size content (%)	备注 Remark
201	E-GLASS	2400	12-13	UP, VE	0.5±0.15	通用型 General Purpose
826	E-GLASS	2400	12-13	UP,VE	0.5±0.15	透明型 Transparent Purpose



GMT 合股纱

Assembled Roving for GMT

GMT 合股纱适用于增强性 PP 树脂，是一种结构材料，广泛应用于汽车，建筑，包装、电器等领域。

Assembled roving for GMT is designed for reinforcing modified PP. And it is a structural material, which is widely used in automotive, construction, packaging, electrical equipments industry and so on.



产品特点 Product Features

- 与树脂的相容性好
- 纤维硬挺度好
- 抗电性和短切性优
- Multi-compatible with resins
- Good strand stiffness
- Excellent static control for easy chopping

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	线密度 Linear density (tex)	适用树脂 Compatible resin	备注 Remark
702	E/ECR-GLASS	2400	PP	短切分散性好，低静电，在PP树脂中浸透好 Good Dispersion after chopping, low static, good compatible with PP



玻纤聚丙烯复合纤维纱

Combotex Roving (PP+FIBERGLASS)

玻纤聚丙烯复合纤维纱是一种玻璃纤维涂覆PP树脂而成的高性能预浸料，可直接用来成型PP树脂复合材料，而不需要添加额外的树脂。

该产品适用的成型工艺包括模压，真空辅助成型，拉挤成型和缠绕成型等，其应用领域涵盖航空航天，汽车工业，建筑，体育器材，新能源等各个方面。

COMBOTEX ROVING (PP+GIBERGLASS) is a kind of high performance prepreg which is made of glass fiber coated PP resin, which can be directly used to form PP resin composite, without the need to add extra resin.

This product is suitable for molding process, including die casting, vacuum assisted molding, pultrusion and filament winding, etc., and its applications include aerospace, automotive industry, construction, sports equipment, new energy and other aspects.



产品特点 Product Features

- 稳定的热塑性预浸料，自身浸渍优良
- 生产环境清洁，可回收，绿色环保
- 工艺周期短，生产效率高
- 玻纤含量高
- Stable thermoplastic prepreg, excellent impregnation
- Production environment clean, recyclable, green environmental protection
- Short process cycle, high production efficiency
- High glass fiber content

技术参数 Technical Specification

产品代号 Product code	纤维类型 Type of fiber	树脂 Resin	玻纤含量 Fiberglass Content	线密度 Linear density (tex)	产品颜色 Product color
CH-PP60/1870N	E/ECR-GLASS	Polypropylene resin	60%	1870	Natural color

热塑性短切原丝 (PP)

Chopped Strands for Thermoplastics (PP)

热塑性短切原丝由玻璃原丝短切而成，表面涂覆硅烷型浸润剂，适用于增强 PP,PA,AS/ABS,PET,PBT POM,PPS and PC等。具有优良的集束性和流动性。

热塑性短切原丝主要用于注塑和压缩成型工艺，其典型的最终用途应用包括汽车工业、家用电器、阀门、泵房、耐化学腐蚀及运动器材等。

Chopped Strands for Thermoplastics come from the short cutted glass strands. The surface is coated with silane type size. Chopped Strands for Thermoplastics are designed for reinforcing PP, PA, AS/ABS, PET, PBT POM, PPS, PC and so on. It has excellent cluster and fluidity.

Chopped Strands for Thermoplastics are mainly used in injection and compression molding processes and its typical end-use applications include automotive industry, home appliances, valves, pump housings, chemical corrosion resistance and sports apparatus.



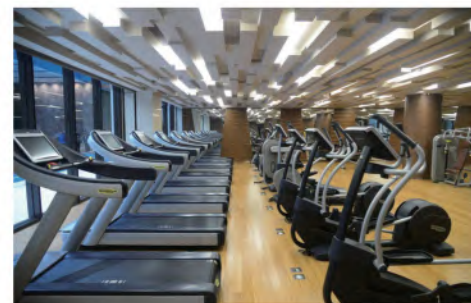
产品特点 Product Features

- 集束性好，毛羽少
- 与基体树脂具有良好的相容性
- 机械性能好
- 流动性好，分散性好
- 优异的表面状态
- Good strand integrity, minimum fuzz
- Good bonding between chopped strands and matrix resin
- Good mechanical properties
- Good liquidity, good dispersion
- Excellent surface condition

技术参数 Technical Specification

示例 Example : 13 μ m-4.5MM

产品代号 Product code	108	
Item	Testing Method and Standard	
	Testing Method	Standard
Oil content(%):	ISO 1887	0.5 $\pm$ 0.15
Filament Diameter (um)	ISO1888	13 $\pm$ 10%
Chopped strand rate(%)	Q/JSJ0362	$\geq$ 98
Moisture content(%):	ISO3344	$\leq$ 0.10
Chopped Length	Q/JS J0361	4.5 $\pm$ 1.0 mm



热塑性短切原丝 (PA6 and PA 66)

Chopped Strands for Thermoplastics (PA6 and PA 66)

热塑性短切原丝由玻璃原丝短切而成，表面涂覆硅烷型浸润剂，适用于增强 PP,PA,AS/ABS,PET,PBT POM,PPS and PC等。具有优良的集束性和流动性。

热塑性短切原丝主要用于注塑和压缩成型工艺，其典型的最终用途应用包括汽车工业、家用电器、阀门、泵房、耐化学腐蚀及运动器材等。

Chopped Strands for Thermoplastics come from the short cutted glass strands. The surface is coated with silane type size. Chopped Strands for Thermoplastics are designed for reinforcing PP, PA, AS/ABS, PET, PBT POM, PPS, PC and so on. It has excellent cluster and fluidity.

Chopped Strands for Thermoplastics are mainly used in injection and compression molding processes and its typical end-use applications include automotive industry, home appliances, valves, pump housings, chemical corrosion resistance and sports apparatus.



产品特点 Product Features

- 集束性好，毛羽少
- 与基体树脂具有良好的相容性
- 机械性能好
- 流动性好，分散性好
- 优异的表面状态
- Good strand integrity, minimum fuzz
- Good bonding between chopped strands and matrix resin
- Good mechanical properties
- Good liquidity, good dispersion
- Excellent surface condition

技术参数 Technical Specification

示例 Example : 11 μ m-4.5MM

产品代号 Product code	116	
Item	Testing Method and Standard	
	Testing Method	Standard
Oil content(%):	ISO 1887	0.5 $\pm$ 0.15
Filament Diameter (um)	ISO1888	11 $\pm$ 10%
Chopped strand rate(%)	Q/JSJ0362	$\geq$ 98
Moisture content(%):	ISO3344	$\leq$ 0.10
Chopped Length	Q/JS J0361	4.5 $\pm$ 1.0 mm



玻璃纤维湿法短切丝 Fiberglass Wet Chopped Strands

湿法短切丝（水拉丝）是由连续玻璃纤维原丝经短切成一定长度而制成，是制造玻璃纤维纸和薄毡的原材料。

广泛应用于建筑材料，石油化学，照明工业，电器工业等。玻璃纤维纸和薄毡可以用作蓄电池的隔板、油毡。

Wet chopped strands are produced from continuous filament strands and used as raw material of fiberglass paper and fiberglass tissue mat, it's widely uses in building materials, petrochemistry, light industry and electrical industry, the main applications are battery separators, asphalt felts, etc.



产品特点 Product Features

- 出色的流动性
- 能在水浆中快速均匀地分散
- 在石膏中突出的分散性
- Superb fluidity
- Good dispersion in water
- Excellent distribution in gypsum

技术参数 Technical Specification

产品代号 Product code	短切长度 Chop length,mm	含水率 Moisture content(%)	可燃物含量(%) Size content (%)
502	3,6,9,12	10 ± 2	0.10 ± 0.05



连续纤维增强热塑性带材 Continuous Fiber Reinforced Thermoplastic Tapes

连续纤维增强热塑性（CFRTP）带材是以连续纤维作为增强材料，以热塑性树脂为基体，通过特殊工艺制造的高强度，高刚性，高韧性的新型复合材料。CFRTP材料的开发，延续了热塑性材料从纯树脂→短纤维增强热塑性材料→长纤维增强热塑性材料的材料革新进程，由于连续纤维的增强，CFRTP材料具有优异的力学性能，在各个领域应用不断突破，新产品广泛开发。应用领域包括航空航天，火车，汽车，造船，集装箱，建筑装饰，管道，安全，运动休闲，军工等。

Continuous fiber reinforced thermoplastic(CFRTP) tapes are based on continuous fiber and thermoplastic resin as reinforced material and matrix respectively. It can manufacture high-strength, high-rigidity, high-toughness composite material through special processes. As the high strength of continuous fiber, CFRTP material has excellent mechanical properties, which is widely used in various fields such as aerospace, train, automobile, shipbuilding, container, architectural ornament, pipeline, safety, Sports & Leisure, war industry etc. and more new products have been developed.



产品特点 Product Features

- 热塑性材料及纤维的选择广泛
- 储存期限不受限制
- 环保，循环使用
- 质轻，比强度高，力学性能优异
- 产品设计灵活，材料性能可控
- 防腐防潮性能好
- 工艺先进，可自动化生产
- Thermoplastic material and various choice
- Indefinite shelf life
- Environmentally friendly, Recyclable
- Light weight, high strength, excellent mechanical properties
- Flexible product design, controllable material properties
- Excellent anti corrosion and moisture resistance
- Advanced technology, automatic production

技术参数 Technical Specification

项 目 Item	测试标准 Test Condition	单 位 Units	测试数据 Test data	
			CH-CF PP-EGF60	CH-CF PE-EGF60
玻纤含量The Content of Glass Fiber		%	60	60
密度 Density		g/cm ³	1.53	1.54
片材厚度 Tape Thickness		mm	0.3	0.3
片材宽度 Tape Width		mm	≤1300	≤1300
拉伸强度 Tensile Strength	ASTM D3039	MPa	800	780
拉伸模量 Tensile Modulus	ASTM D3039	GPa	30	28
断裂伸长率Elongation at Break	ASTM D3039	%	2.7	2.7
热变形温度 Heat Deflection Temperature	ASTM D648	℃	155	125

江苏长海复合材料股份有限公司

JIANGSU CHANGHAI COMPOSITE MATERIALS HOLDING CO.,LTD

Add: 江苏省常州市武进区遥观镇塘桥 Tangqiao, Yaoguan Town, Changzhou, Jiangsu, China

Tel: 0086-519-88708813 88708812 Fax: 0086-519-88710135 88708809

Http://www.changhaigfrp.com E-mail: mail@changhaigfrp.com



CHANGHAI
INNOVATIONS FOR YOUR BETTER LIFE

MAT
毡



Brief Introduction 公司简介

江苏长海复合材料股份有限公司成立于 2000 年，是一家集科研、产品开发、生产、销售、服务于一体的民营科技型上市企业。

目前，公司已建成年产 5.5 万吨和 7 万吨的 ECR 池窑，形成了以玻璃纤维纱、玻璃纤维短切毡、湿法薄毡、涂层毡为主的四大产品系列，品种覆盖各种无碱玻纤直接纱、喷射纱、SMC 片材用纱、车顶棚用纱、透明板用纱、缠绕挤拉纱、短切毡用纱、聚丙烯复合纤维纱、热塑性短切原丝及无碱玻纤短切毡、薄毡、蓄电池复合隔板、方格布、网格布、复合毡、双向轴向织物、多轴向织物与缝编毡、新型墙体保温复合贴面材料系列等。近年来，公司又引进了玻璃纤维连续毡，玻璃纤维复合防火板层压板，连续层压复合板等生产线。产品应用领域包括汽车制造、游艇、卫浴设施、储罐、管道包覆、冷却塔、透明板材、建筑装饰等。

公司现有国际先进的多条玻璃纤维制品生产线，拥有拉力、厚度、可燃物含量等一系列高端质量检测设备和全电脑检测分析仪，保证玻纤生产的每一个环节都经过严格的检测。公司通过了 ISO9001:2000 质量管理体系认证，并获全国防水行业建设奖，被江苏省科学技术厅认定为江苏省高新技术企业；新型超细玻璃纤维复合隔板被命名为江苏省高新技术产品。2008 年公司通过 ISO14001, ISO9001, TS16946 管理体系。2011 年 3 月 29 日江苏长海复合材料股份有限公司在深圳交易所创业板上市，股票代码 300196。

Jiangsu Changhai Composite Materials Holding Co., Ltd., founded in 2000, is a large listed scientific and technical enterprise focusing on scientific research, product development, production, sales and service in the area of fiberglass products manufacture.

Now, the company had successfully completed the two ECR furnace with output of 55,000 tons and 70,000 tons, the company has formed four main series of products for fiberglass roving, chopped strand mat, fiberglass tissue and coated mat, covering all kinds of E-glass roving for filament winding, spray-up roving, SMC roving, chopping roving for headliner, panel roving, roving for pultrusion, assembled Roving for Chopping, combotex roving (pp+fiberglass), chopped strands for thermoplastics and chopped strand mat, tissue, colored & printed tissue, battery separator, new insulation wall cover material, stitch combo mat, woven roving, stitch mat, biaxial fabric, multiaxial fabric, mesh and so on. In recent years, Changhai introduced the new product lines for continuous filament mat, fiberglass high pressure laminate, continuous laminated. Applications include automobile manufacturing, yachts, private facilities, storage tank, pipeline coating, cooling towers, architectural decoration, and so on.

By now, the company has several advanced glass fiber production lines. With kinds of international advanced quality testing equipments in tensile strength, thickness and binder content and computer analysis instruments, every progress of fiberglass is produced in rigorous testing. On 2008 year, the company obtained the ISO14001, ISO9001, TS16949 management system certification, and it received the awards of Construction of national waterproof industry and was identified as the high-tech enterprises in Jiangsu Province. New ultra-fine glass fiber compound separator was named the high-tech products in Jiangsu Province. On March 29, 2011, Jiangsu Changhai Composite Materials Holding Co., Ltd is listed on the Shenzhen Stock Exchange GEM, the stock code is 300196.



玻璃纤维短切毡 Chopped strand mat

玻璃纤维短切毡是由玻璃纤维短切后，无定向均匀沉降，施加粉末或乳液粘剂制成的玻璃纤维无纺增强材料。主要适用于手糊玻璃钢和机械成型工艺，易于加工处理并有极好的成型性能。

玻璃纤维短切毡树脂浸透快，具有极高的透明度，同时，均匀的纤维分布使产品覆模性好，在成型后强度高。玻璃纤维短切毡广泛应用于采光瓦、冷却塔、化学品储罐、FRP 管道、洁具、船体和甲板以及 FRP 车厢板等等。

同时公司也提供轻克重的玻璃纤维短切毡

Our Chopped Strand Mat is fine strand reinforcement material made from E-glass cut fibers laid in a random pattern and bonded with powder or emulsion binder. It is specially designed for hand lay-up and continuous laminating process. It is easy to handle and has excellent moulding performance.

Also, it has rapid resin penetration together with a fast strand wet out time. The mat also brings a highly translucent finished laminates. Also, the fine strand input makes the fiber prominence at the finished laminates surface extremely low. It is an excellent reinforcement material for translucent roofing panel, chemical storage tanks, FRP pipes, boat hulls and decks, truck body panel and so on.

We can also supply light weight chopped strand mat .



产品特点 Product Features

- 克重分布均匀
- 树脂浸透快，且速度一致
- 容易消除气泡，提高工作效率
- 成品透明度高
- 软硬适中，覆模性好
- 与 UP 、VE、EP 树脂相溶
- 消耗树脂少，降低生产成本
- Excellent weight uniformity
- Fast wet out
- Easy air release
- Excellent transparency of finished products
- Excellent laminate clarity
- Low resin consumption

技术参数 Technical Specification

产品代号 Property	单重(%) Area Weight	含水率(%) Moisture Content	可燃物含量(%) Binder Content	拉力强度(N/150mm) Tensile Strength	幅宽(mm) Width
测试方法 Test Method	ISO3374	ISO3344	ISO1887	ISO3342	ISO 5025
EMC85	85	≤0.20	9±5	≥50	±5
EMC100	100	≤0.20	9±5	≥70	±5
EMC120	120	≤0.20	9±5	≥100	±5
EMC225	225	≤0.20	2-8	≥80	±5
EMC300	300	≤0.20	2-8	≥130	±5
EMC450	450	≤0.20	2-8	≥150	±5
EMC600	600	≤0.20	2-8	≥170	±5
EMC900	900	≤0.20	2-8	≥180	±5

备注：幅宽范围一般从 200mm 至 3600mm，客户如有其他要求也可定制。

Note: It' s available with a width range from 200mm—3600mm. Other specifications are also available on customer requests.



玻璃纤维连续毡 Continuous Filament Mat

玻璃纤维连续毡是一种新型单丝叠层无纺增强材料，它以连续单丝无定向曲线排布构成多结点交错结构。不经集束直接通过浸润剂粘剂而成。具有各向同性好，强度高，树脂浸透速率快，制品平整度与表面光洁度高等优点，特别适合于生产拉挤型材和形状复杂的模压成型复合材料制品。

Continuous filament mat is made up of continuous fiberglass strand (its main raw material is continuous fiberglass strand). It is containing an insoluble for unsaturated polyester, epoxy, phenolics and polyurethane resin compatibility in unfilled or filled resin system. It could be used for RTM, infusion, pultrusion process etc., for example automotive inner decorative parts and cable insulation materials.



产品特点 Product Features

- 干态强度高
- 浸透速度快
- 具有良好的覆膜性，生产的型材外表光
- High Breaking Strength of dry and wet condition
- Rapid wet-through
- Easily conforms to complex shapes, while providing a smooth finished surface

技术参数 Technical Specification

克重 Density (g/m²)	含水率 Moisture Content(%)	可燃物含量 Binder Content(%)	拉伸强度 Tensile strength (N/75 × 200mm)	门幅 width (mm)
300	≤ 0.2	2.1 ~ 6.3	> 200	1040,1200
450	≤ 0.2	2.1 ~ 6.3	> 300	1040,1200
600	≤ 0.2	2.1 ~ 6.3	> 350	1040,1200



无捻粗纺方格布 Woven roving

无捻粗纺方格布是一种由直接纱交织而成的双向织物。

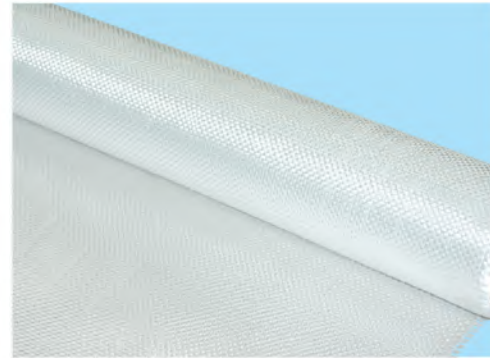
无捻粗纺方格布适用于许多树脂，例如不饱和聚酯树脂、乙烯基树脂和环氧树脂。

无捻粗纺方格布是一种高性能的增强材料，广泛用于手糊和机械成型产品，如船艇、容器、飞机和汽车部件，家具、运动设施和其它应用领域。

Woven roving is a bidirectional fabric made by interweaving direct rovings.

Woven roving is compatible with many resins, such as polyester, vinyl ester and epoxy resins.

Woven roving is a high-performance reinforcement and widely used in processes such as in hand lay-up, molding, and pultrusion for the production of boats, automotive parts, furniture, sport facilities and other fields.



产品特点 Product Features

- 与多种树脂相容
- 贴膜性好，垂直型好，易于操作
- 浸透性好，施工效率高
- 透明性佳
- 极佳的机械性
- Multi-resin-compatible
- Easy shape adaptation
- Easy impregnation
- Good transparency
- Excellent mechanical properties

技术参数 Technical Specification

产品代号 Product code	单重(%) Area weight	经纬密度 (头/厘米) Density warp × weft (ends/cm)	粗纱线密度 Tex (warp × weft)	可燃物含量 Combustible content (%)
EWR200	200	4.6 × 4.6	200 × 200	0.4-0.8
EWR270	270	4.6 × 4.1	300 × 300	0.4-0.8
EWR300	300	5.0 × 5.0 / 3.2 × 1.8	300 × 300 / 600 × 600	0.4-0.8
EWR360	360	3.2 × 1.8	600 × 900	0.4-0.8
EWR400	400	3.6 × 3.2	600 × 600	0.4-0.8
EWR500	500	2.2 × 2.0	1200 × 1200	0.4-0.8
EWR580	580	2.6 × 2.2	1200 × 1200	0.4-0.8
EWR600	600	2.6 × 2.4	1200 × 1200	0.4-0.8
EWR800	800	2.0 × 1.6	2400 × 2400	0.4-0.8

备注：幅宽范围一般从 50mm 至 3300mm，客户如有其他要求可定制。

Note: It's available with a width range from 50mm-3300mm. Other specifications are also available on customer requests.



缝编毡和缝编复合毡 Stitch mat and stitch combo mat

缝边毡是将原纱短切成 5cm 后，均匀沉降，然后用涤纶线缝编而成的一种玻璃纤维织物。

缝边复合毡是由无捻粗纺布复合一层均匀平铺的短切原丝，然后缝编而成的玻璃纤维织物。

该两种产品适用于不饱和聚酯树脂、乙烯基树脂、酚醛树脂和环氧树脂等。广泛应用于玻璃钢拉挤成型工艺、手糊成型工艺和树脂传送模塑料工艺等。缝编毡和缝编复合毡在造船业和 FRP 管道业应用最广，主要终端产品有：玻璃钢船体、管道连接、法兰、板材、冷藏器具和型材等。

Stitch mat is a fabric made by chopping continuous strands into chopped strands of certain length and stitching together the chopped strands.

Stitch combo mat is a complex mat made by stitching, together woven roving and a layer of evenly distributed chopped strands.

They are compatible with polyester, vinyl ester, phenolic and epoxy resins. The product is widely used in pultrusion, hand lay-up and RTM processes. The product is used most widely in the boat industry and the typical applications include FRP boat hulls, automotive housings and doors, laminates, cooling apparatus and structural shapes.



产品特点 Product Features

- 厚度均匀
- 渗透速率高
- 拉力强度佳
- 尺寸稳定性好，不易产生位移变形
- 便于树脂的流动和渗透
- Even thickness
- Fast wet out
- Good tensile strength
- Dimensional stability
- Better wet out and resin flow

技术参数 Technical Specification

产品代号 Product code	克重 Total(g/m²)	短切毡 CSM(g/m²)	方格布 Roving/WR(g/m²)	宽幅 Width(mm)	层数 Layers	每卷重量 Unit Roll weight
EMK300	300	300		20-3300	单	
EMK450	450	450		20-3300	单	
EMK600/275	875	275	600	20-3300	双	60kg
EMK600/450	1050	450	600	20-3300	双	60kg
EMK800/275	1075	275	800	20-3300	双	60kg
EMK800/450	1250	450	800	20-3300	双	60kg

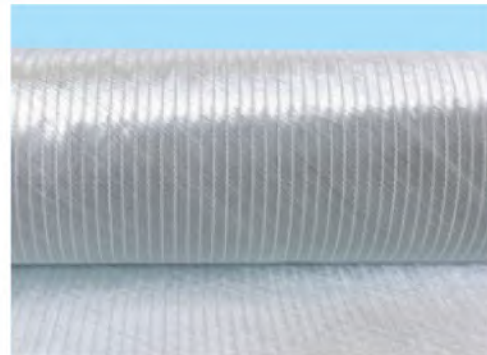


玻璃纤维双轴向布 E-glass Biaxial Fabrics

此类产品是一种不卷曲，具有多轴向和多层结构的增强材料。每一层之间通过聚酯纱线加以缝合而成，可通过使用多个方向（0°，90°，+45°，-45°）不同的组合，或者与短切纤维或薄毡等无纺材料缝合而成。应用于增强不饱和聚酯树脂，乙烯基树脂，环氧树脂，典型制品为风力叶片，船体，容器，运动器材，汽车部件等。

This fabrics is non-crimp, multi-axis and multi-layered reinforcements. The layers are stitched via polyester yarn. Fabrics can be produced using multiple axis (0°, 90°, +45°, -45°), or combined with chopped mat and multiple layers of veil and /or tissue materials.

Suitable for unsaturated polyester resin, vinyl ester resin, epoxy resin. Main products include wind blade, boats, sports equipment, automobile parts ect.



产品特点 Product Features

- 厚度均匀
- 浸透速度快
- 尺寸稳定性好，不易产生位移变形
- 良好的机械力学性能
- Even thickness
- Fast wet out
- Dimensional stability
- Good mechanical properties

技术参数 Technical Specification

产品代号 Product code	规格（每层单位面积克重） Specification (layer weight g/m ²)						总重量 Total weight(g/m ²)
	0°	90°	+45°	-45°	捆绑纱 Stitch yarn	毡 Mat	
BX600	331	300	-	-	12	-	643
BX800	413	402	-	-	12	-	827
BXM600/450	331	300	-	-	12	450	1093
BX300	-	-	153	153	8	-	314
BX600	-	-	301	301	8	-	609
BX800	-	-	401	401	8	-	810
BXM800/450	-	-	401	401	8	450	1260



蓄电池隔板毡和蓄电池隔板 Tissue battery separator and battery separator

蓄电池隔板毡主要用作铅酸蓄电池隔板的基材，用含 S-BM 制成的复合隔板具有较好的耐振动性能和机械强度，用此隔板装配的蓄电池起动能力强，使用寿命也较长。

The battery separator tissue is chiefly used as the base material of lead acid battery separator. The compound battery separator with S-BM series mat possesses a good vibrating resistance with a good starting ability and longer service life.



- 产品具有表面平整，吸液能力强，耐酸性好，厚度均匀，高锰酸钾还原物少等特点。
- 同时我公司还提供玻纤复合隔板系列和 AGM 隔板毡系列。
- The surface is level and smooth, with good liquid absorption, well acid resistance, even thickness and few potassium permanganate reeducate etc.
- Also we can supply fiberglass compound separator series and AGM separator series.

玻纤网格布 Fiberglass mesh

玻纤网格布是水泥、塑料、沥青、大理石、屋面、墙体等理想的增强材料。The product is used in cement, plastic, marble, roof, inside and outside wall etc. Widely used as an ideal reinforcement material.



- 强度高、耐碱、耐酸，与树脂粘结性强，易溶于苯乙烯，硬挺性、定位性极佳，是理想的增强材料。
- 我公司可以生产各种克重的网格布，例如 40, 70, 90, 110, 135, 150, 165, 210 等。
- High strength, excellent alkali and acid resistance, strong adhesion with resin, easy dissolution in styrene, with top stiffness and locativeness, widely used as an ideal reinforcement material.
- We can supply the woven mesh with different weight (g/m²) like: 40, 70, 90, 110, 135, 150, 165, 210 and different width (cm) like: 20, 50, 100, 135. Also the production with user's specification can be made.



PE 电池隔板 PE battery Separator

PE 电池隔板的发明延长了酸铅蓄电池的使用寿命，特别表现在较高的温度环境下与标准 PE 分离板比较，具有较高的抗穿刺性，将最大限度地减少网格扩展引起的尖角穿刺问题。PE 隔板广泛应用于不间断电源蓄电池，叉车蓄电池，高尔夫球车电池。

PE separation designed to extend its service life in lead acid battery especially in the higher temperature condition. Also having a higher puncture resistance as compare with the standard PE separator.it would minimize the puncture problem caused by the sharp corner of the expansion grid.PE Separator is widely being used in UPS Battery,Fork-lift Battery, Golf-cart Battery.

汽车蓄电池隔板 Automotive Separators

标准自动汽车电池，采用独特的工艺确保其高性能工作。特别的自动和小型汽车电池，PE 隔板两侧的侧板会尽量减少隔板氧化引起的裂缝，从而延长电池的使用寿命。适用于启动电池及免维护汽车电池。

Standard AUTO,Unique process adopted ensures high performance.

Special AUTO+MINI,Ribs on both side of PE separator would minimize the separator cracks caused by the oxidation,thus,extend battery's life..Adapt to SLI batteries and maintenance-free automotive batteries.

技术参数 Technical Specification

Item/项目	Units/单位	Standard/标准
B/W	mm	0.200±0.030 0.250±0.030
O/A	mm	(0.80~1.30) ±0.05
Puncture Resistance耐穿刺性	N	≥8
Elongation(CMD) 延伸性	%	≥300
Electrical Resistance抗电阻性能	Ω.d m ²	≤0.0010 (standard) ≤0.0015 (special)
Porosity 空隙率	%	≥55
B/W含油率	%	≥8
O/A含油率	%	12≤X≤18
Moisture content含水率	%	≤3.0
Dimension stability稳定性	%	≤1.0
Wetting time 浸透率	S	≤60
Acid weight loss 酸失重率	%	≤4.0
Fe content 铁含量	%	≤0.010
Cl content 氯含量	%	≤0.030
Reducing substance还原性物质	ml/g	≤10

此外，我们可以提供工业隔板，玻璃纤维 PE 隔板，摩托车隔板。

Also we can supply industrial separators,PE separators with glass mat,Motorcycle separators.



玻璃纤维复合防火层压板 Fiberglass Panel Laminate

绿色环保、防火等级高的玻璃纤维防火装饰板采用无纸化贴面，节约了大量的木材资源，增强了耐火性能及保温性能。其防火性能远优于纸质装饰板、木质板等材料，可广泛应用于需要防潮、防霉、防火和高强度的地方。

Fiberglass decorative laminate with Green Initiative、High Level Fireproof property is produced with out any paper, this research for us to save a lot of timber resource, at the same time enhance The panel's fireproof and thermalinsulation properties. Fireproof performance of GFRP Panel is more better than paper lamination decorative panels and wood panels, it can be used for the place where waterproof、waterproof、fireproof and high intensity needed.



产品特点 Product Features&Application

- 防火性能
- 防水性能
- 耐磨损
- 抗化学性能
- 抗静电
- 易清洁，易加工
- Fire-proof
- Water-proof
- Wear-resistant
- Chemical resistant
- Anti-static
- Easy cleaning and fabrication

可应用于任何装饰表面：家具，隔间，卫生间隔断，火车车厢，汽车，橱柜，船舶，电梯，实验室台面，计算机房地板，外墙等。

It can be used on most of the decorative surface, such as Furniture, compartment, Toilet Cubical, train carriage, bus, cabinet, ship, lift, laboratory table, computer flooring, exterior and so on.

产品类别 Product range:

- 防火板
- 弯曲板
- 抗静电板
- 康贝特板
- 金属拉丝板
- 理化板
- High Pressure Laminate
- Post-forming Laminate
- Anti-static Laminate
- Compact Laminate
- Metal Laminate
- Chemical resistant Laminate

