



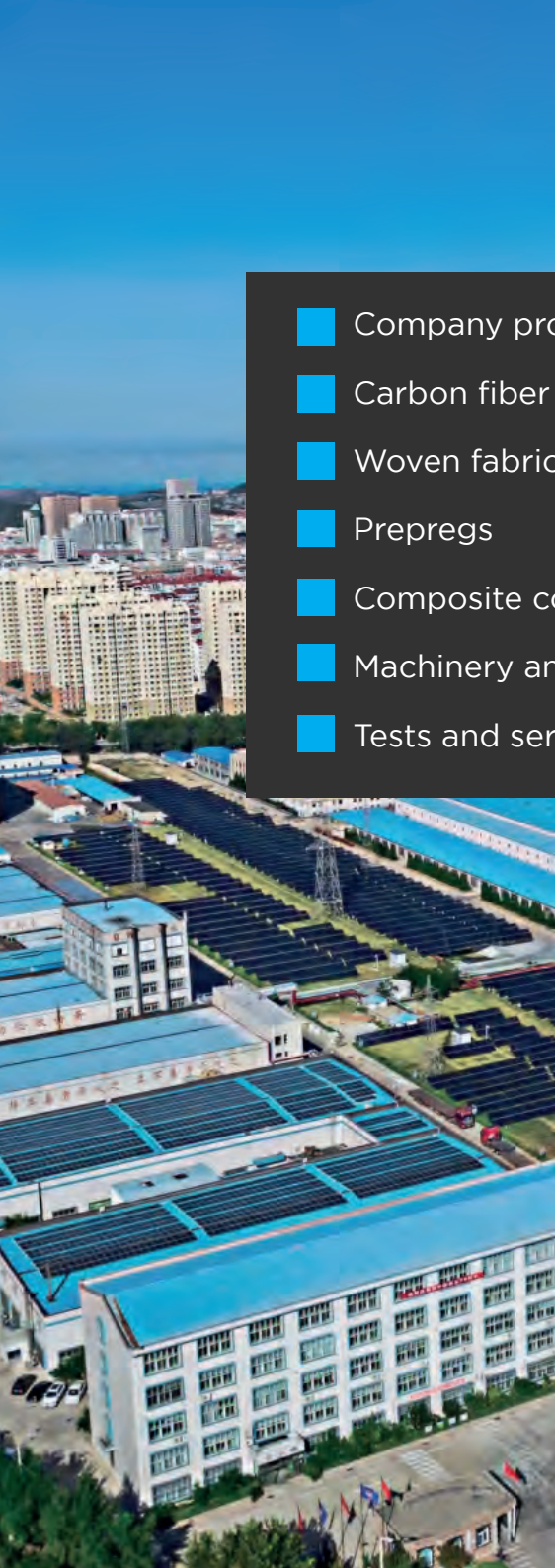
光威复材
GW COMPOS



European Agent

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COMPANY PROFILE

Weihai Guangwei Composites Co., Ltd. (GW COMPOSITES) is a high-tech enterprise specialized in the R&D and manufacturing of high-performance carbon fiber and composites. GW COMPOSITES can provide customers with the integrated whole industry chain solution of “carbon fiber-fabrics-prepregs-composite components-equipment-components testing”.

Relying on the National Industrial Design Center, the National Enterprise Technology Center and other R&D platforms, the company has formed strong R&D capability, thus obtained more than 800 authorized patents and was authorized to preside over the drafting of the Chinese national standards of “PAN-based Carbon Fiber” and “Carbon Fiber Prepreg”.

The company passed the Bureau Veritas Quality Management System Certification of civil aviation for the production and sales of carbon fiber, prepregs and carbon fiber products etc. In addition, the company owns a CNAS laboratory whose testing capabilities for composite materials is internationally recognized. The company is committed to developing and becoming a highly competitive supplier in the global carbon fiber and composite materials market. On the way to internationalization, the company upholds the spirit of openness and cooperation to jointly promote the development and application of carbon fiber materials together with the global partners.



CARBON FIBER

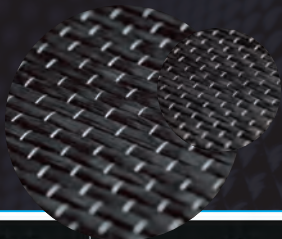
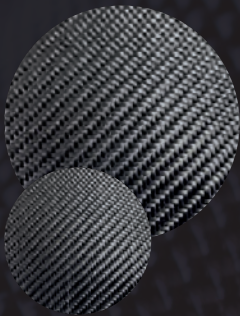
Type	Filaments	Linear Density (g/km)	Tensile Strength (MPa)	Tensile Modulus (GPa)	Density (g/cm ³)	Elongation (%)
TZ300	1K	66	≥3530	221-260	1.78	≥1.40
	3K	198				
TZ700S	12K	800	≥4900	≥230	1.80	≥1.70
	24K	1600				
	36K	2400				
TZ700S-QM	24K	1600	≥5500	250—270	1.80	≥1.70
TZ800S	12K	450	≥5880	280—320	1.79	≥1.80
	24K	900				
	36K	1350				
TZ800G	12K	450	≥5880	280—320	1.79	≥1.80
	24K	900				
TZ1000G	12K	450	≥6370	280—320	1.79	≥1.90
	24K	900				
TZ1100G	12k	450	≥6500	310—350	1.79	≥1.90
TZ40S	6K	225	≥4400	370—390	1.78	≥1.1
	12K	450				
TZ40J	6K	225	≥4000	≥365	1.78	≥1.0
	12K	450				
TZ55J	3K	109	≥3500	≥520	1.90	≥0.6
	6K	218				

WOVEN FABRICS & NON-CRIMP FABRICS

■ Woven fabrics

Series	Weave	Areal Weight (g/m ²)
CF 1K	plain/twill/ pointed twill/ satin etc	100-130
CF 3K		190-370
CF 12K		100-650
Glass Fiber		200-900
Aramid		170-220
CF & GF		160-900
CF & Aramid	plain	140-220
Rapier		160-220
Building Reinforcement		140-500
Colored Filament		180-220

Note:Width, length, weight and texture can be customized according to customers' inputs.



■ Non-crimp fabrics

Type	Axis	Fiber	Single-layer Weight	Width
Multi-axial	0°	Carbon Fiber/ Glass Fiber/ Aramid etc.	100-400g/m ²	1270±10mm
	0°/90°			
	0°/+45°/-45°			
	0°/+45°/90°/-45°			
	+45°/-45°/chopped strand mat			

Note:Width, length, weight and texture can be customized according to customers' inputs.

PREPREGS



■ Resin System for Prepregs

Name	Resin Type	Curing Temperature°C	Main Feature	Application
6511	Epoxy Resin	120	Middle temperature cured	Suitable for glass fiber, carbon fiber, aramid fiber and fabric prepregs; Suitable for applications in sports and leisure products, aerospace components, electronic communications.
7901	Epoxy Resin	120	Middle temperature cured	Suitable for glass fiber, carbon fiber; aramid fiber and fabric prepregs; Suitable for sports and leisure products/industrial products/medical equipments/aerospace components.
9A16	Epoxy Resin	120	Middle temperature cured, good strength, toughness and temperature resistance	Suitable for glass fiber, carbon fiber, aramid fiber and fabric prepregs; Suitable for industrial products and aerospace components, etc.
7112	Epoxy Resin	120	Middle temperature cured	Suitable for glass fiber, carbon fiber and fabric prepregs and semi-prep; Suitable for wind turbine blades / automotive leaf springs and other large component applications.
GE10	Epoxy Resin	180	High temperature cured, high toughness	Suitable for Carbon fiber and fabric prepregs for aerospace primary and secondary load bearing structures.
9B14	Epoxy Resin	120	Halogen-free flame retardant, passed UL94 V0, CCAR/FAR 25.853 flame retardant test, EN45545 Flame Retardant Grade HL3	Suitable for aviation interior, automotive, rail transportation, industrial products and other industry applications.
GE16	Epoxy Resin	130	Middle temperature cured, halogen-free flame retardant	Suitable for prepregs (hot melt method) with carbon fiber, glass fiber, aramid fiber and fabrics as reinforcement material; Suitable for aviation interior, automobile, rail transit, industrial products, etc.
17423CE	Cyanate Ester Resin	130	Middle temperature cured, low dielectricity, good antenna	Suitable for prepregs with quartz fibers and its fabrics, glass fibers and its fabrics; Suitable for radomes and other industries that require wave-transparent applications.
16423CE	Cyanate Ester Resin	180	High temperature cured, good temperature resistance, low dielectricity, good antenna	Suitable for prepregs with quartz fibers and its fabrics, glass fibers and its fabrics; Suitable for radomes and other industries that require wave-transparent applications.
11C19	Bismaleimide Resin	210	Toughened and modified, good temperature resistance	Suitable for prepregs with carbon fibers and its fabrics, glass fibers and its fabrics; Suitable for industrial products, aviation, aerospace components and other industry applications.
6517a	Adhesive Film Resin	120	Good adhesion	Mainly used in honeycomb structure bonding, etc.

WOVEN FABRICS & NON-CRIMP FABRICS

■ Prepreg(thermosetting)

Type Spec	Unidirectional Carbon Fiber Prepreg	Unidirectional Fiberglass Prepreg	Unidirectional Aramid Fiber	Carbon Fiber Fabric Prepreg	Fiberglass Fabric Prepreg
Fiber Weight g/m ²	20~1000	75~2000	60~125	80~1000	20~1200
Resin Content %	20~60	30~60	20~40	20~60	20~60
Standard Length	100m/roll (Length can be customized according to fiber density requirements and customers' Inputs.)				
Standard Width	Unidirectional Prepreg:300~1260mm			Fabric Prepreg:800~1260mm	
Packing	After bonding with release paper coated with silicon on both sides (with polyethylene film on one part of the surface), it is rolled in a paper tube and sealed in a moisture-proof polyethylene bag, or directly rolled in a paper tube with polyethylene film and sealed in a moisture-proof polyethylene bag. 1000mm width prepreg carton size: 1250mm x 450mm x 450mm. Prepreg tube size: Inner diameter 304mm, length 1200mm.				
Shelf life	22±4℃——1 month	-5~0℃——6 months	-18℃ and below——12 months		
Caution	1. Prepreg rolls should be stored in sealed bags under refrigeration. 2. Prepregs should be thawed sufficiently to return to room temperature prior to sampling, ensuring that the prepregs are sealed during the thawing process. 3. Sealed bags should not be opened if the surface of the bag becomes atomized after being dried. 4. Minimize the exposure time of the prepreg outside the freezer. 5. Any prepreg samples that have become wet or contaminated should not be reused. 6. Any remaining prepreg after use should be tightly rewound and sealed to avoid distortion and moisture absorption. The prepreg should then be re-stored in cold storage. 7. Prepregs are generally harmless when used under specified safety measures. Measures should also be taken to prevent the uncured material from coming into contact with the skin, as some people with skin allergies may be affected. 8. Wash skin thoroughly with soap and warm water at the end of each work session. Avoid the use of solvents.				

■ Prepreg Tape

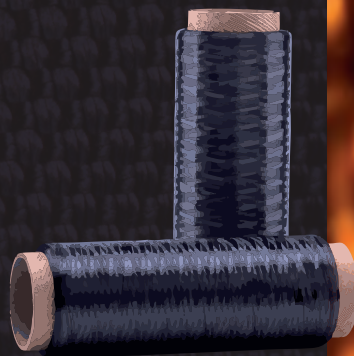
Width	Slitting Precision
3mm~1000mm	±0.5mm
3.175mm, 6.35mm, 12.7mm	±0.125mm
Note: Slitting specifications from 3mm to 1000mm can be customized.	

■ Towpreg

Carbon Fiber Grade	Resin	Resin Content	Length/roll
TZ700/TZ800	GE216	23% ± 3%	2500~5000m

■ Prepreg(thermoplastic)

Spec \ Type	PEEK Prepreg
Fiber Weight g/m ²	100~160
Resin Content %	30~40
Length	300m/roll Max (Length can be customized according to customers' needs.)



COMPOSITE COMPONENTS AND PRODUCTS

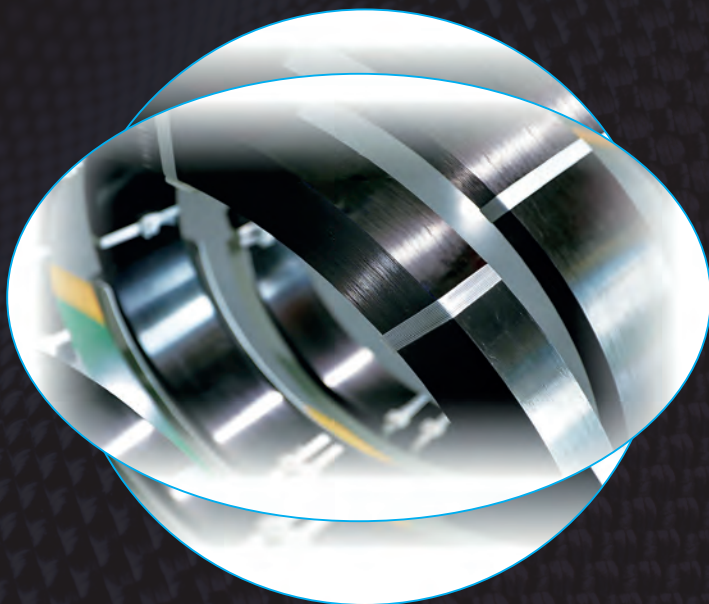


Based on the eight major technologies of pultrusion, molding, tube-rolling, winding, autoclave, out-of autoclave(OOA), resin transfer molding (RTM), and automated layup,GuangWei's composite products segment not only achieves innovative breakthroughs in basic materials, but also expands its application fields extensively, providing high-performance composite solutions for many industries around the world.



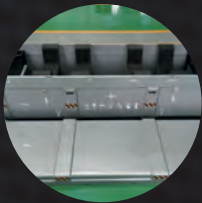
■ Pultrusion

The pultrusion process is suitable for the production of planks, rods, tubes and other products of equal cross-section. The company has dozens of pultrusion production lines, and the products are used in many fields such as wind turbine blades, building reinforcement, textile machinery and so on.



■ **Molding**

Molding process is suitable for some products with high requirements for internal and external dimensions and appearance, and can manufacture laminates, sandwich panels, square tubes, composite frames and other heterogeneous composite structural parts.

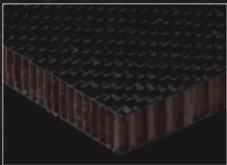


Composite Packing Box of Storage and Transportation

Laminates



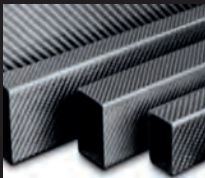
Sandwich panels



Composite frames



Square tubes



Press Plate Size(mm)	Product Specification		
	Length(mm)	Width(mm)	Thickness (mm)
800×1200	≤620	≤1010	0.2≤t≤6
1200×2000	≤1010	≤1810	
3200×2200	≤3000	≤1950	
4300×2200	≤3860	≤1860	

■ **Tube-rolling**



The roll forming method involves wrapping prepreg around a cylindrical or square mandrel, which is then heated and pressurised with the aid of a heat-shrink film to produce a round or square tubular component.

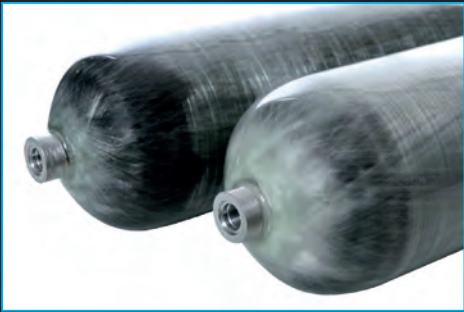
The surface of the cured tubing is ribbed, called threaded rod, and can be painted after sanding. The surface can be finished with woven fabrics of different patterns or colors.

NO.	Vertical Curing Oven(mm)	Product Specification		
		Length(mm)	Outer Diameter (mm)	Thickness (mm)
1	1200×1250×2390	≤1300	≤80	Φ0.5~Φ5mm
2	1450×1300×3.5	≤2500	≤80	
3	1500×1700×1500	≤500	≤80	
4	1440×1480×4500	≤3500	≤80	
5	1150×1050×7080	≤6000	≤50	

NO.	Horizontal Curing Oven(mm)	Product Specification		
		Length(mm)	Outer Diameter (mm)	Thickness (mm)
1	6000×2000×1800	≤5500	≤350	Φ0.5~Φ26mm
2	6000×2000×1500	≤5500	≤350	
3	1000×1000×1000	≤500	≤350	
4	2000×2000×4000	≤1500	≤350	
5	14000×3000×4000	≤13000	≤350	
6	21000×1500×2000	≤19000	≤350	

■ Winding

Process is the continuous fiber through the resin solution (or fiber tape, pre-preg yarn) in accordance with a certain path winding to the mandrel, and then by curing, demolding to produce parts, mainly for the production of pressure vessel products.



■ Autoclave & Out-of-autoclave

Process is the continuous fiber through the resin solution (or fiber tape, pre-preg yarn) in accordance with a certain path winding to the mandrel, and then by curing, demolding to produce parts, mainly for the production of pressure vessel products.

Autoclave Size	Platform Size (mm)	Product Specification		
		Length(mm)	Width(mm)	Thickness (mm)
Φ1.5×3m Φ3×8m Φ3.6×12m Φ4.5×25m	1500×1200×160	≤1300	≤1000	0.2≤t≤6
	2900×900×200	≤2690	≤730	
	2900×1300×430	≤2690	≤1100	
	4000×2500×550	≤2960	≤2290	
	4500×2310×560	≤4260	≤2100	
	6000×2500×550	≤5760	≤2290	

Both processes use single-sided molds for products with high single-surface size and appearance requirements, and can manufacture some composite parts such as plates, skins, cowls, beam ribs, panels, and so on.

The autoclave process improves the structural strength of the parts by increasing the ambient pressure, reduces defects and naturally costs more.

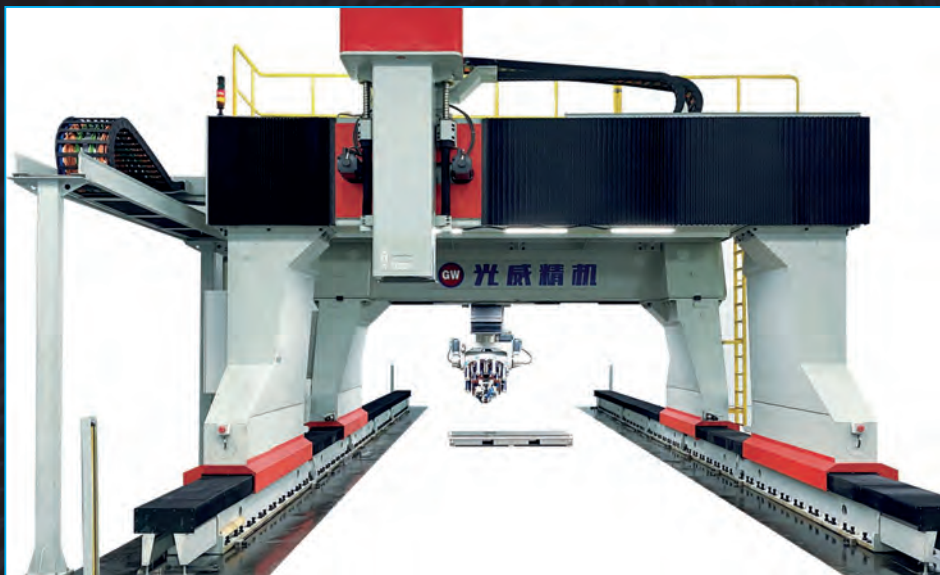
■ Resin Transfer Molding (RTM)

Resin transfer molding is a process of injecting resin into a closed mold to infiltrate the reinforcing material and cure it. The reinforcing material is mostly multi-axial fabrics, which effectively reduces the process time and lowers the molding cost, and the product surface is smooth and free of defects.



■ Automated Layup

The equipment is independently developed by our company, equipped with 16- and 8-filament laying heads and with a maximum movable range of 9m 4m. Laying head with 16-filament wide-band is used for laying low-curvature parts of ledge type, with a maximum lifting range of the head of 0.8 , while the 8-filament narrow-band laying head is equipped with a rotating axle, which is used for laying large-curvature ledge type, beams of lengths within 4m, and rotating bodies, with a maximum lifting range of the head is 1.2mm..



MACHINERY AND EQUIPMENT

■ Prepeg Line

- Thermoplastic prepreg line
- Hot-melt prepreg line CNC fabrics
- and tape prepreg line



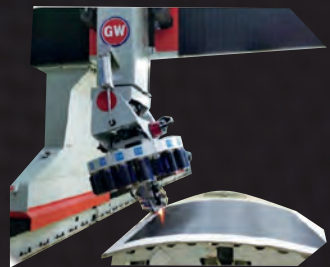
■ Winding Machine



- Gantry winding machine
- Vertical winding machine
- Horizontal winding machine
- Additive-subtracting machine

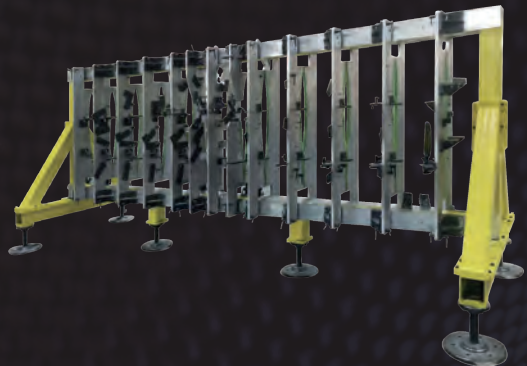
■ AFP& ATL Machine

- Gantry automatic fiber placement machine
- Robotic arm laying platform
- Robotic arm laying and winding machine
- Automatic plate spring laying machine



■ Tooling

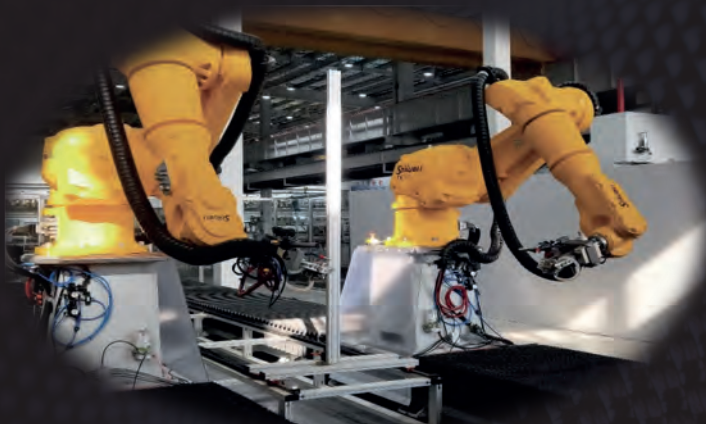
- Aircraft assembly frames
- Combined assembly tooling
- Forming molds



TEST AND SERVICES

■ *Inspection Capability*

Guangwei Composite has a professional testing department, in which the linear density, sizing content, tensile strength, tensile modulus, carbon content and other parameters for carbon fiber are tested.



For composite parts, with advanced ultrasonic scanning, ultrasonic C-scanning and X-ray inspection systems, Guangwei has capable of processing high-precision and high-efficiency inspection of many products to ensure a high level of quality control.

■ **CNAS** *China National Accreditation Service for Conformity Assessment*

The “National Engineering Laboratory for Carbon Fiber” constructed by Guangwei company has a number of internationally recognized testing capabilities for composite materials and can issue authoritative test reports.

