NO: AC.2021. P.01

Asia Composite Co.
(Knowledge Based)

SPECIFICATIONS OF FRP/GRP PROFILES

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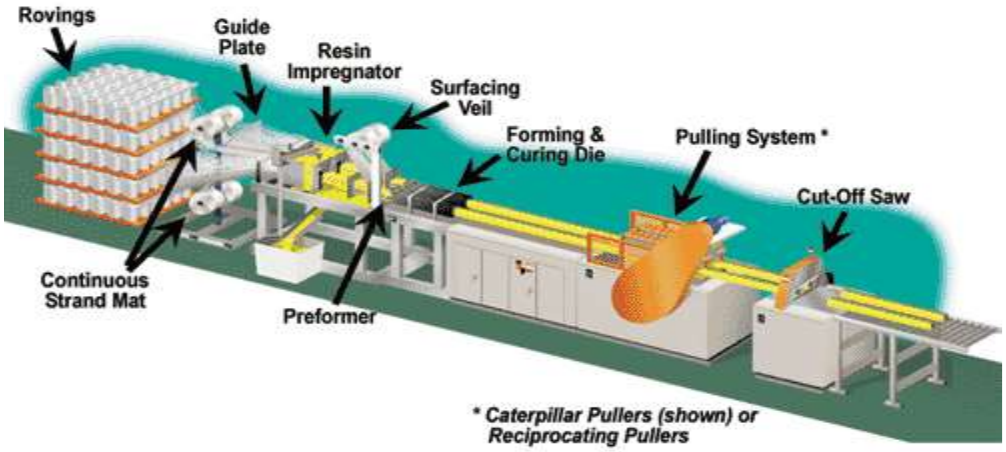
DEFINITION OF FRP/GRP COMPOSITES:

FRP/GRP composites are fiber-reinforced polymer. The strength of GRP composite depends on the type, direction, quantity and location of fiberglass used in product. Resin used for bonding glass fibers which makes it more difficult piece, impact resistance and corrosion resistance. By the way type of resin changes amount of corrosion resistance, flame retardant and maximum operating temperature.

PULTRUSION PROCESS:

Pultrusion is a continuous process to produce shapes with constant cross sections. Raw materials are a liquid resin mixture (containing resin, Fillers and specialized additives) and flexible textile reinforcing fibers. The process involves pulling this raw materials (rather than pushing, as is the case in extrusion) through a heated steel forming die using a continuous pulling device. The reinforcement materials are in continuous forms such as rolls of mat and doffs of roving. As the reinforcements are saturated with the resin mixture (wet-out) in the resin bath and pulled through the die, the gelatin or hardening, of the resin is initiated by the heat from the die and a rigid, cured profile is formed that corresponds to the shape of the die. While pultrusion machine design varies with part geometry, the basic pultrusion process concept is described in the following schematic.

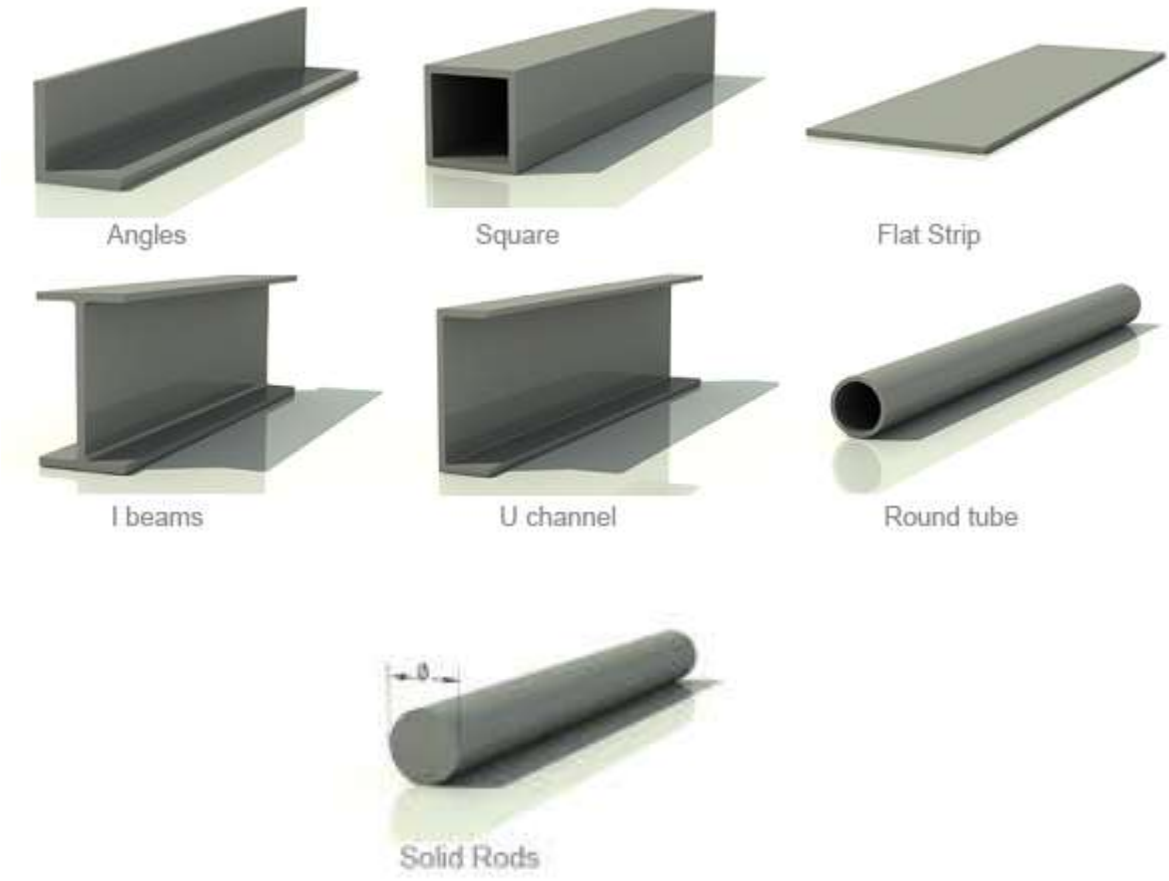


The creels position the reinforcements for subsequent feeding into the guides. The reinforcement must be located properly within the composite and this is the function of the reinforcement guides.

The resin bath saturates (wets out) the reinforcement with a solution containing the resin, fillers, pigment, and catalyst plus any other additives required. The interior of the resin bath is carefully designed to optimize the wet-out of the reinforcement.

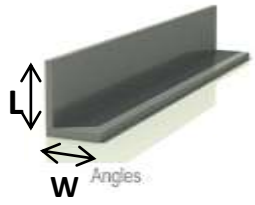
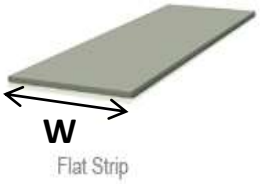
TYPES OF FRP/GRP PROFILES:

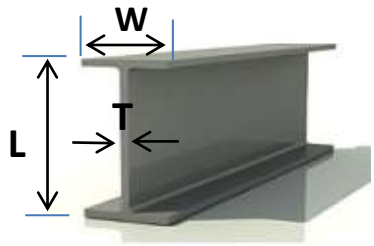
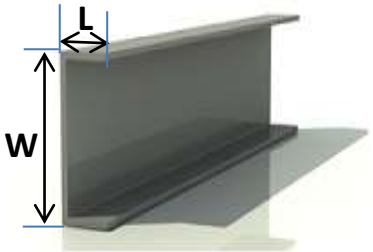
This company produces FRP/GRP composite profiles such as Angle, Square, U channel, I beams, solid rod, Round Tube and Flat strip. We have ability to make mold to produce any kind of composite profile.



In the case of assembled products which are demanded by customers are designed and installed by our company's engineering.

Table 1: Dimensions of FRP/GRP Composite Profiles

	Length (mm)	Width (mm)	Thickness (mm)
	40 50 60 75 80 100	40 50 60 75 40 100	5 6 6 10 4 10
	25 30 38 48 50 70 70 70 70 80 100	25 30 38 48 50 30 50 50 60 70 80 100	3 3 4 4 4 3 4 5 10 3 6 6
		7 8 10 33 40 44 50 64 70 87	4 5 3 10 10 10 10 10 10 10

	Length (mm)	Width (mm)	Thickness (mm)
 I beams	150 148 46 38 25	126 75 15 15 15	10 8 4.5 4 4
 U channel	30 50 40 40 40 40 100 110 30 200	50 50 100 100 150 150 200 220 265 280	5 3 10 6 10 6 3 5 6.6 5

	Outside Diameter (mm)	Inside Diameter (mm)
 Round tube	7	4
	8.5	3.5
	8.5	4
	9.5	4
	12	4
	12	5
	12	8
	16	10
	20	8
	20	12
	20	14
	20	16
	24	20
	26	11
	26	12
	26	14
	26	17
	26	20
	30	22
	30	24
	32	20
	32	27
	38	30
	38	32
	46	36
	46	38
	46	40
	50	38
	50	40
	50	45
	52	43
	52	45
	72	62
	116	100
	116	104
	116	108

	Diameter (mm)
	0.5 1.4 1.7 2.5 3 4 5 7 8.5 9.5 12 16 18 19 20 22 24 26 30 32 38 55 60

ADVANTAGES OF FRP/GRP PROFILES:

- Light weight
- Corrosion resistant
- Non conductive (Electricity & thermal)
- Flame resistant
- High tensile strength than metal
- Impact resistant
- Non slip
- Non magnetic
- Antistatic
- No maintenance
- High fatigue life
- Safety & Easy installation

Table 2: Physical, Mechanical and Electrical Specification

Property	Test Method	Unit	Value
Density	ASTM D-792	gr/cm^3	2
Water Absorptivity rate	ASTM D-570	%	0.2-0.6
Tensile Strength	ASTM D-638	MPa	200-600
Bending Strength	ASTM D-790	MPa	460
Compressive Strength	ASTM D-695	MPa	547
Di Electrical Strength	ASTM D-149	Kv/mm	13
Elongation at rupture	ASTM D-3916	%	2.5
Hardness	ASTM D-2583	Barcol	45-70
Impact Strength	ISO 179	Kj/m^2	279
Thermal Expansion Coefficient	ASTM D-696	10^{-6}/ °C	4-5
Flame Spread	ASTM E-84		25 MAX

APPLICATIONS:

- Handrail
- Tower
- Fence
- Structure
- Guard
- Ladder
- Cable Ladder
- Installation base
- Electricity post
- Rod insulator
- Light Pole
- Window
- Support
- Scaffold
- Cross arm
- Cooling Tower