



BRAND OF FRP LIGHT POLES

Innovative Engineering,
Renovating Life

Yohan Enterprises

For Effective Results

FRP
Poles



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Fibreglass Lighting Poles

Yohan Enterprises Pty Ltd (Australia) collaborates with EPP Composites (India) globally for the supply of FRP Light Poles. With experience of 25 years in the field of FRP and GRP we have crafted elegant solutions of lighting poles. These nonconductive and anticorrosive poles are constructed of Polyester / Epoxy Resin Systems and Fibreglass woven rovings, with more than 65% of the reinforcing fibreglass in the axial vertical plane which gives the desired stiffness and axial strength. Due to non homogenous and non isotropic nature of material the structural design with GRP material becomes more complex than the conventional materials such as steel and timber. As a result in-depth design calculations and analysis is required to account for the varying material properties and direction of loading.

In the process of manufacturing EPP fibreglass poles deflection, strength, shear and fatigue are the properties kept under observation. Deflection is controlled with preferential orientation and volume of fibre reinforcement. The sufficient strength to resist loading and compressive buckling is benefited by off-angle reinforcement, as is shear. Resistance to fatigue is increased by balancing the laminate structure to minimize internal stresses and fibre interactions. Wind poses a significant fatigue load of varying frequency to poles and masts, that is also well accounted in design phase to obtain a quality product.

EPP fibreglass lighting poles are classic application of fibreglass that can withstand heavy mechanical loadings and the most abrasive atmospheric conditions. Our poles can withstand the wind speed of 180 km/hr, however on request we can also design for wind speed up to 250 km/hr.

Properties	Standards	Value
Specific Gravity	ASTM D 792	1.65 kg / dm ³
Glass Content (% age by weight)	ASTM D 2584	55 % - 65 %
Tensile Strength	DIN 53455 / ASTM D 638	—250 N/mm ² / 400 ± 50 MPa
Water Absorption	ASTM D 570	0.5 %
Flexural Strength	DIN 53452 / ASTM D 790	—170N/mm ² / 350 ± 50 MPa
Compressive Strength	ASTM D 695	200 ± 50 MPa
Impact Strength	DIN 53453 / UNI 6062 / 67	— 5N/mm ² / > 180 KJ / m ²
Dielectric Strength	DIN 53481 / ASTM D 149	about 3 KV/mm / 3-7 KV /mm
Thermal Conductivity	ASTM D 177	0.2 – 0.3 Kcal /mH °C
Coefficient of Linear Expansion	ASTM D 696	15 – 17 °C x 10 ⁻⁶



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Fibreglass Lighting Poles' Advantages

- Non corrosive - No above or below the ground corrosion in salty climates or alkali /acidic soil conditions.
- Maintenance free - No corrosion or decay occurs thereby ensuring that the surface coat of the pole will not require any form of maintenance.
- Light weight - The low mass saves handling, transport and erection costs during installation.
- Longevity - Fibreglass poles outlasts wood, concrete, steel and aluminum poles under similar climatic conditions.
- Non-conductive - Perfect electrical insulation prevents accidental electrocution by faulty wiring.
- Low inertia - A reduction in personal injury and less damage to vehicles in road accidents.
- High bending strength - Engineered to withstand a wind pressure of 500 Pa inclusive of 0.20 m² luminaries' area with less than a 5% deflection of the mounting height.
- Versatility - A wide range of spigots, floodlight mountings, base plates and decorative arrangements ensure a product for almost every application.
- Vandal resistant - High impact strength of polyester gel coat and glass filament wound structure.
- High strength - Since it is a single piece (joint less) of length 4mtrs - 13 mtrs.

Fibreglass Lighting Poles' Applications

In tapered or cylindrical geometry the EPP fibreglass poles are suitable for wide variety of applications such as:

- Telephone lines
- Electric power lines
- Overhead lines or lighting in chemical plants, ports, jetties etc
- Traffic lights
- Directional sign systems
- Road and Street lightings
- Lighting of small and large leisure areas and sport complexes
- Sport equipments (goal spots, volleyball net poles, etc)
- Lighting of parks and other open spaces
- Advertising signs and standard poles
- Poles for protective barriers



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Fibreglass Lighting Poles' Manufacturing Processes

For conical poles EPP is using filament winding process, which involves impregnating reinforcing fibres with catalyzed resin, the winding them onto a solid rotating mandrel. Successive layers of reinforcement are built up on the mandrel until the required thickness is achieved. Winding of the reinforcement can be adjusted to vary the strength of the tube between the axial and circumferential directions according to the loading requirements and other specifications of the application. Void free winding is possible to maximize the electrical properties i.e. eliminate the air content, of the component for high voltage. Conical Poles of following dimensions are made by the Filament winding process:

- Length: 4 meters to 13 meters
- Base O.D.: min. 143 mm Ø – max. 315 mm Ø
- Top O.D.: 105 mm Ø

The Pultrusion process is also used for making circular poles / tubes. A pultruded composite consists of reinforcing materials, such as unidirectional glass fibres, otherwise called rovings, continuous fibreglass mat and a thermoset resin that binds the composite together. A polyester surfacing veil to improve the external appearance of the composite and chemical resistance may also be added. A variety of ancillary materials may be added to the resin formulation, such as pigment for colour, accelerators to speed the curing of the thermoset resin, internal release agents, and several various types of inert fillers, each having its own functionality. A pultruded profile can be uniquely designed to meet any custom application. Circular Poles of following dimensions are made by the Pultrusion process:

- Length: max. 4 mtrs
- O.D.: 75mm Ø & 100mm Ø



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Fibreglass Lighting Poles' Design principles

EPP lighting poles are designed and manufactured as per the following standards:

- ANSI C 136. 20-1990
- BS EN 40 – 7: 200
- AASHTO LTS-2 1985
- IS 875 (part 3) 1987

The pole lengths have a tolerance of not exceeding 0.3 metre per 10 metres.

Fibreglass Lighting Poles' Colours

Poles are supplied in different colours: green, grey, blue, white, black (or others upon request). The material surface is scratch resistant and UV protected.



Fibreglass Lighting Poles' Colours

Fibreglass Lighting Poles' Accessories

Junction boxes

- Internal
- External



Internal Junction Box



External Junction Box

Brackets (Lengths of 1000mm/1500mm/2000mm)

- Single Arm
- Double Arm



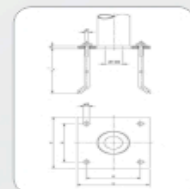
Single Arm Bracket



Double Arm Bracket

Base plate & anchor bolts plus nut

- External



Base plate & anchor bolts plus nuts

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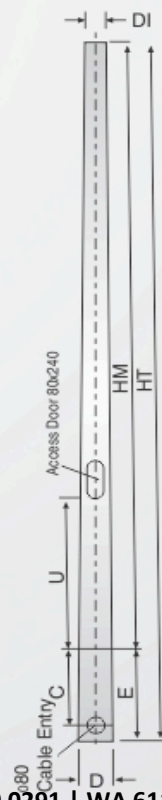
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Direct Burial Type Fibreglass Lighting Poles

Model No.	D1	D	HT	HM	C	E	U
EPP BT 7530	75	75	3000	2250	400	750	500
EPP BT 7540	75	75	4000	3250	400	750	500
EPP BT 10030	100	100	3000	2250	400	750	500
EPP BT 10040	100	100	4000	3250	400	750	500
EPP BT 14340	105	143	4000	3400	397	600	500
EPP BT 15746	105	157	4600	4000	400	600	500
EPP BT 16852	105	168	5200	4500	400	700	500
EPP BT 17757	105	177	5700	5000	400	700	1000
EPP BT 18063	105	180	6300	5500	400	800	1000
EPP BT 18469	105	184	6900	6000	400	900	1000
EPP BT 19274	105	192	7400	6500	400	900	1000
EPP BT 20280	105	202	8000	7000	400	1000	1000
EPP BT 21086	105	210	8600	7500	400	1100	1000
EPP BT 22092	105	220	9200	8000	500	1200	1000
EPP BT 23098	105	230	9800	8500	600	1300	1000
EPP BT 230104	105	230	10400	9000	600	1400	1000
EPP BT 240110	105	240	11000	9500	700	1500	1000
EPP BT 250116	105	250	11600	10000	800	1600	1000
EPP BT 300122	105	300	12200	10500	800	1700	1000
EPP BT 310128	105	300	12800	11000	800	1800	1000
EPP BT 315130	105	315	13000	11200	800	1850	1000

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D1 = Top Diameter
HT = Total Pole Length
HM = Mounting Height
D = Base Diameter
C = Depth of cable entry
E = Buried Depth
U = Access Door Height



All dimensions are in mm & approximate, designed for Wind Speeds of 180 km / hr

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Base Plate Type Fibreglass Lighting Poles

Model No.	D1	D	HM	U
EPP AT 7522	75	75	2250	500
EPP AT 7532	75	75	3250	500
EPP AT 10022	100	100	2250	500
EPP AT 10032	100	100	3250	500
EPP AT 14334	105	143	3400	500
EPP AT 15740	105	157	4000	500
EPP AT 16845	105	168	4500	500
EPP AT 17750	105	177	5000	1000
EPP AT 18055	105	180	5500	1000
EPP AT 18460	105	184	6000	1000
EPP AT 19265	105	192	6500	1000
EPP AT 20270	105	202	7000	1000
EPP AT 21075	105	210	7500	1000
EPP AT 22080	105	220	8000	1000
EPP AT 23085	105	230	8500	1000
EPP AT 23090	105	230	9000	1000
EPP AT 24095	105	240	9500	1000
EPP AT 250100	105	250	10000	1000
EPP AT 300105	105	300	10500	1000
EPP AT 310110	105	300	11000	1000
EPP AT 315112	105	315	11200	1000

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D1 = Top Diameter
HM = Mounting Height
D = Base Diameter
U = Access Door Height





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