

PROVIDING STRENGTH TO THE NATION



## FRP ROD CATALOGUE

As a Strength member in  
Optical fiber cable

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At **UM Cables**, core strength of a cable is what matters the most and that is why we are proud to introduce FRP - the Fibre Reinforced Plastic rods that will strengthen cables from the core.

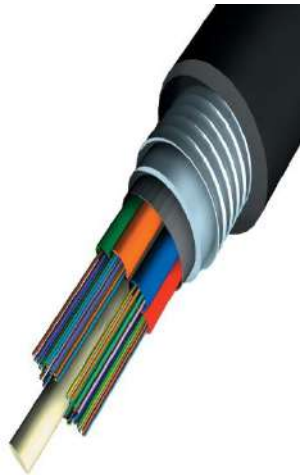


**3 R's define our cables with FRP**

- Rugged - they are tough from the inside.
- Resilient - as good as unbreakable.
- Reliable - when we are strong at the core, you know you can rely on us.

**FIBRE REINFORCED PLASTIC ROD (FRP Rod)**

FRP Rod is used as strength member in Optical fiber cable



Manufacturing Capability

0.4 mm to 5.0 mm diameter (UV Cured Technology)

Physical Property	VALUES		TEST METHOD
Glass content	80 to 85% by weight		DIN EN ISO 1172
Density	2.05 to 2.15 g/cc	0.08 lb/in <sup>3</sup>	DIN 53479
Diameter stability	±0.05 mm	± 0.002 in	--
Ovality	≤0.05 mm	< 0.002 in	--
Splices	None		--

Features

Anti-bucking properties provides the protection during installation during the life of the cable.

Provides excellent Strength to the optical fiber cable

Lower bend capability

UV Cured FRP for better bonding & safer w.r.t dermatologically hazards

Suitable for all type of Optical fiber cable i.e Multi tube, Unitube etc.

Best solution for central & peripheral strength member

Cost effective solution as a strength member

Superior dimensional stability

High tensile modulus

Long, splice-free lengths

Consistent diameter and shape

Adhesion to up jacketing materials

Mechanical Characteristics

Parameters	Specified Value		Test Method
Tensile Strength	≥ 140 Kg /mm <sup>2</sup> / 1.50GPa	2.18 x 10 <sup>5</sup> psi	ASTM D 3916 (DIN EN ISO 527-4)
Tensile Modulus	≥ 5000 Kg /mm <sup>2</sup> / 50GPa	>7.25 x 10 <sup>6</sup> psi	ASTM D 638 (DIN EN ISO 527-4)
Flexural Strength	≥ 70 Kg /mm <sup>2</sup>	--	ASTM D 790
Flexural Modulus	≥ 5000 Kg /mm <sup>2</sup> />50GPa	>7.25 x 10 <sup>6</sup> psi	ASTM D 3916
Elongation at Break	2.5-4.0 %		ASTM D 3916 (DIN EN ISO 527-4)
Coefficient of Thermal Expansion	≤ 6.6E -06 / 5.2x10 <sup>-6</sup> /°C	2.9 x 10 <sup>-6</sup> /°F	ASTM D 696 (DIN ISO 7991)
Water Absorption after 24hrs	≤1.0 %	--	ASTM D 570
Min BenDiameter (≤ 25D) at ambient temperature	No Decomposition or delamination		--
Heat stress @80°C 24hrs ,50xD	No Decomposition or delamination		--
Thermal Resitance Test @ 100°C 5 Days ,60xD	No Decomposition or delamination		--
Water Resistance Test @80°C 5 Days ,80xD	No Decomposition or delamination		--

Standard Packing Length	
0.8 – 2.0 mm	50 Kms
2.1 mm to 2.5 mm	25-50 Kms
2.5 mm to 3.5 mm	12.5 – 25.5 Kms
3.6 mm to 5.0 mm	12.6 Kms

**Packing Length (Can be match with customer’s requirement)**

Applications

It is a di-electric strength member used in optical Fiber cable.

FRP Rod used as Central strength member or embedded in a sheath.

FRP strength members are also widely used in various copper cables for last mile connectivity as well as power Transmission.

**TYPICAL PROPERTIES OF DIFFERENT SIZES OF FRP**

Diameter of FRP		Load (N) @ Elongation			Weight	
mm	Inch	0.50 %	1.00 %	Break	Kg/km	lb/kft
0.50	0.020	50	100	295	0.43	0.29
0.60	0.024	70	140	425	0.62	0.41
0.70	0.028	95	190	575	0.84	0.56
0.80	0.031	125	250	755	1.09	0.73
0.90	0.035	160	320	955	1.39	0.93
1.00	0.039	195	395	1180	1.71	1.15
1.10	0.043	240	475	1425	2.07	1.39
1.20	0.047	285	565	1695	2.46	1.65
1.30	0.051	330	665	1990	2.89	1.94
1.40	0.055	385	770	2310	3.35	2.25
1.50	0.059	440	885	2650	3.85	2.58
1.60	0.063	505	1005	3015	4.38	2.94
1.70	0.067	565	1135	3405	4.94	3.31
1.80	0.071	635	1270	3815	5.54	3.72
1.90	0.075	710	1420	4255	6.17	4.14
2.00	0.079	785	1570	4710	6.84	4.59
2.10	0.083	865	1730	5195	7.54	5.06
2.20	0.087	950	1900	5700	8.28	5.55
2.30	0.091	1040	2075	6230	9.05	6.07
2.40	0.094	1130	2260	6785	9.85	6.61
2.50	0.098	1225	2455	7365	10.69	7.17
2.60	0.102	1325	2655	7965	11.56	7.75
2.70	0.106	1430	2865	8590	12.47	8.36
2.80	0.110	1540	3080	9235	13.41	8.99
2.90	0.114	1560	3305	9910	14.38	9.65
3.00	0.118	1765	3535	10605	15.39	10.32
3.10	0.122	1885	3775	11320	16.43	11.02
3.20	0.126	2010	4020	12065	17.51	11.74
3.30	0.130	2140	4275	12830	18.62	12.49
3.40	0.134	2270	4540	13620	19.77	13.26
3.50	0.138	2405	4810	14430	20.95	14.05