

Pultruded FRP Vs. Other Material of Construction

Fiber reinforced Plastic is one of the most modern and superior materials of construction used for making cooling towers. There are other materials of construction like Timber, Steel, RCC etc. which were being used for making cooling tower offer a limited range of properties making them suitable for specific purposes only. FRP in comparison offers itself to be used in wide variety of application, environment and location. This is possible because FRP can be made to suit a particular requirement. Though a thorough comparison with other materials is not possible as FRP's properties are completely customizable but for Pultruded FRP components a general comparison can be seen in the table below:

Sr. No.	Properties	Pultruded FRP	Wood	PVC	Steel	Aluminum
1	Density (gm/cm ³)	1.9	0.58	1.38	7.8	2.7
2	Thermal conductivity (W/m ^o K)	0.35	0.1	0.1	40	170
3	Coefficient of linear expansion (cm/cm C) x 10 ⁻⁶	5.2	1.7	37	8	23
4	Elastic Modulus (GPa)	26	12	3	210	70
5	Tensile strength (MPa)	400	80	65	400	240
6	Bending strength (N/mm ²)	486.3	1	70	380	180
7	Specific Heat capacity (J/ kg ^o K)	1880	1700	1100	461	921
8	Fire resistance	Good	Poor	Poor	Excellent	Good
9	Electrical Conductivity	Non-Conductive	Conductive when wet	Non Con-ductive	Conductive	Conductive
10	EMI Transparency	Transparent to radio waves	N.A.	Transparent to radio waves	Transpar-ent to ra-dio waves	Highly Re-reflective
11	Resistance					
	acids	Excellent	Poor	Good	Poor	Poor
	alkalis	Good	Poor	Average	Good	Good
	solvents	Good	Average	Poor	Good	Good
	sea environment	Excellent	Average	Poor	Average	Average
	weather influence	Excellent	Average	Good	Poor	Poor
	steam	Good	Average	Poor	Average	Average