FIBERGLASS TUBES PROPERTIES COMPARISON CHART

	FRP COMPOSITES PULTRUDED	STEEL A 709 GRADE 50	ALUMINUM 6061-T651 & 6061-T6	WOOD DOUGLAS FIR
CORROSION, ROT AND INSECT RESISTENCE	Resists broad range of chemicals. Unaffected by moisture. Resists insect damage.	Subject to oxidization and corrosion. Requires painting or galvanizing.	Can cause galvanic corrosion.	Can warp, rot, and decay when exposed to moisture, water and chemicals. Susceptible to attack by insects.
STRENGTH	Has greater flexural strength than timber and often stronger than steel and aluminum in the lengthwise direction. Ultimate flexural strength: LW = 30,000 psi (30 ksi) CW = 10,000 psi (10 ksi) Compression strength: LW = 30,000 psi (30 ksi) CW = 15,000 psi (15 ksi)	Homogenous material Yield strength = 36 ksi	Homogenous material Flexural strength = 35 ksi	Modulus of rupture is 12,000 psi
WEIGHT	Weighs 75% less than steel and 30% less than aluminum.	1/2" thick plate = 20.4 lbs/sqft	Lightweight - about a third of the weight of copper or steel	Specific gravity 0.48
ELECTRICAL CONDUCTIVITY	Non-conductive.	Conducts electricity. Grounding potential.	Conducts electricity. Grounding potential.	Can be conductive when wet.
THERMAL PROPERTIES	Low thermal conductivity and expansion. Thermal conductivity: = 4 (BTU in. /(hr ft2 °F) Low thermal coefficient of expansion: = 7-8 (in./in. / °F) 10 E-6	Conducts heat. Thermal conductivity: = 260-460 (BTU/sf/hr/ °F /in.) Low thermal coefficient of expansion: = 6-8 (in./in. / °F) 10 E-6	Conducts heat. Thermal conductivity: = 150 (BTU/sf/hr/ °F /in.) Low thermal coefficient of expansion: = 13 (in./in. / °F) 10 E-6	Low thermal conductivity. Thermal conductivity: = .8 (BTU/sf/hr/ °F /in.) Low thermal coefficient of expansion: = 1.7 - 2.5 (in./in. / °F) 10 E-6
STIFFNESS	up to 3.3 times as rigid as timber. Will not deform under load. Modulus of eleasticity: 2.8 x 10 1E+6 psi	Modulus of eleasticity: 29 x 10 1E+6 psi	Thermal conductivity:	Modulus of eleasticity: 1.6-1.8 x 10 1E+6 psi
IMPACT RESISTENCE	Will not deform under impact.	Can permanently deform under impact.	= 260-460 (BTU/sf/hr/ °F /in.)	Can permanently deform or break under impact.
ENVIRONMENTAL IMPACT	Not hazardess to the environment.	Not hazardess.	Low thermal coefficient of expansion:	May be treated with hazardess preservatives or coatings to increase corrosion, rot, insect resistance. Contributes to the depletion of forest systems