



G-10 / FR-4 / G-11 (Glass-Epoxy)

General Material Properties

Property	Metric	units	English	units
General				
Density	1.9e3 - 2.1e3	kg/m ³	0.0686 - 0.0759	lb/in ³ USD/lb
Mechanical				
Yield Strength	6.5e7 - 7e7	Pa	9.43 - 10.2	ksi
Tensile Strength	7e7 - 7.5e7	Pa	10.2 - 10.9	ksi
Elongation	0.008 - 0.01	% strain	0.8 - 1	% strain
Hardness (Vickers)	1.77e8 - 2.06e8	Pa	18 - 21	HV
Impact Strength (notched)	2.11e3 - 3.82e3	J/m ²	1 - 1.82	ft.lbf/in ²
Fracture Toughness	8e5 - 1.1e6	Pa/m ^{0.5}	0.728 - 1	ksi/in ^{0.5}
Young's Modulus	1.2e10 - 1.4e10	Pa	1.74 - 2.03	10 ⁶ psi
Thermal				
Max Service Temperature	122 - 138	°C	252 - 280	°F
Insulator or Conductor	Insulator		Insulator	
Specific Heat Capability	1.2e3 - 1.4e3	J/kg °C	0.287 - 0.334	BTU/lb. °F
Thermal Expansion Coefficient	2.2e-5 - 2.4e-5	strain/°C	12.2 - 13.3	μstrain/°F
Eco				
CO2 Footprint	4.17 - 4.61	kg/kg	4.17 - 4.61	lb/lb
Recycleable	No		No	

The information on this page is intended as general guidance only and is only accurate at the time of posting (9-10-12). Specific material properties vary by manufacturer. Please contact a Dielectric application engineer for help in choosing the optimal material for your application and budget.