



Typical Properties Data Sheet of FR4

① Raw material description

Standard Grade:	laminated grade	Appearance color:	Natural color - light green
Applications:	Processing materials, sheet, board. It has applicable as insulation structural components for electromechanical/electrical equipment, generators, high and low voltage distribution box, electrical machine.		
Remarks:	Characters: With superior mechanical property and dielectric property, superior heat resistance and moisture resistance, mechinability.		

② Raw material technical datasheet

Property item	Test conditions	Testing method	Testing data	Unit
I. Physical property				
Density	---	GB/IPC4101	2.0±0.2	g/cm ³
Water absorption	thickness 1.6 mm	GB/IPC4101	≤ 19	mg
Flammability class	---	UL94	V0	Class
II .Chemical property				
Tensile strength	---	GB/IPC4101	≥ 240	MPa
Vertical flexure strength	Normal	GB/IPC4101	≥ 340	MPa
Vertical compression strength	---	GB/IPC4101	≥ 350	MPa
Parellel shearing strength	---	GB/IPC4101	≥ 34	MPa
Parellel impact strength	simply supported beam	GB/IPC4101	≥ 33	kJ/m ²
Bonding strength	---	GB/IPC4101	8.0-1.0	KN
Elastic modulus	---	GB/IPC4101	21560-24500	MPa
Hardness-Rockwell	---	GB/IPC4101	120-125	R (Scale)
Hardness-Shore D	---	DIN 53505	96	D
III. Thermal property				
Flammability	---	GB/IPC4101	≥ 170	°C
Max. working temperature(short time)	30S	GB/IPC4101	280	°C
Max. working temperature(long time)	---	GB/IPC4101	150	°C
Melting temperature(processing plate)	---	GB/IPC4101	203°C	°C
Vertical coefficient linear thermal expansion	RT~200°C	GB/IPC4101	1.7×10 ⁻⁴	1/°C
Parellel coefficient linear thermal expansion	RT~200°C	GB/IPC4101	9.2×10 ⁻⁶	1/°C
IV .Electrical property				
Relative dielectric constant	50Hz	GB/IPC4101	≤ 5.5	---
Dielectric loss angle tangent	50Hz	GB/IPC4101	≤ 0.04	---
Electric grinder resistance property	---	GB/IPC4102	200-300	V (CTI)
Insulation resistance after dipping in the water	---	GB/IPC4101	≥ 1.3×10 ¹²	Ω
Volume resistance	---	GB/IPC4102	10 ⁷ ×10 ⁹	MΩ * cm
Surface resistance	---	GB/IPC4103	10 ⁶ ×10 ⁸	MΩ
Electric strength for vertical	90°C oil 20s step by step boosting	GB/IPC4101	≥ 13.7	MV/m
Breakdown volatge for parellel	90°C oil 20s step by step boosting	GB/IPC4101	> 50	kV
Electric arc resistance	---	GB/IPC4101	120-140	sec

NOTE: 1 g/cm³ = 1,000 kg/m³, 1 Mpa = 1 N/mm², 1kV/mm = 1 MV/m

Statement:

NOTE: The information contained herein are typical values intended for reference and comparison purposes only. They should NOT be used as a basis for design specifications or quality control. Cylex will not provide any legally binding guarantee of certain properties, or any suitability.