

LF51 (Lead-Free)

KNN Piezoceramic Material

Description

LF51 is a lead-free piezoceramic formulation based on the potassium sodium niobate system (KNN). It offers properties close to hard-doped PZT ceramics, with a higher permittivity than LF52.

Key Features and Benefits

- Lead-Free Product
- High Mechanical Quality Factor

Ideal Applications

- High-Power Transmitters
- Therapeutics (HIFU, Surgery, Dental)
- Ultrasonic Cleaning, Cutting and Welding

Property	Symbol	Unit	Value
Relative Free Dielectric Constant (1 kHz)	K_{33}^{σ}	-	1100
Dielectric Dissipation Factor (1 kHz)	$\tan\delta$	-	0.01
Curie Temperature	T_c	°C	230
Density	ρ	g/cm ³	4.59
Mechanical Quality Factor	Q_m	-	725
Coupling Coefficients	k_p	-	0.29
	k_t	-	0.30
	k_{31}	-	0.17
	k_{33}	-	0.39
Piezoelectric Charge Coefficient (Displacement Coefficient)	d_{31}		-50
	d_{33}	pC/N	120
	d_{15}		190
Frequency Constants	N_p		3400
	N_t	Hz·m	3000
	N_{31}		2500
	N_{33}		2400