



Ferroperm™ Piezoelectric ceramics

TF2400 hard PZT material

PZT thick film based on Ferroperm Pz24

Pz24 is a hard PZT material with very low dielectric constant, a very low dielectric loss, and high piezoelectric voltage constant. The low dielectric constant of this material can simplify the driving electronics for transducers. It is therefore for example a more sensitive alternative to Lead Titanate for single element medical transducers. Because of its high voltage constant, Pz24 has also gained popularity in accelerometer special applications.

The material is highly compatible with thick film technology and the properties are almost fully conserved in the change from bulk to thick film. The change in properties is mainly attributed to increased porosity in the thick film compared to the bulk material.

Repeatable performance

The main focus through our entire production process is to provide materials and components with the highest possible reproducibility of properties and parameters and to obtain the lowest aging rates in the industry.

Our materials have a variation of $\pm 5\%$ for all parameters. This reduces the requirements for impedance matching, frequency tuning and dimensioning of the housing meaning fewer rejects and lower costs.

Customised solutions

We have more than 60 years of experience in the production of advanced piezoelectric ceramics. Our team has extensive expertise in customising designs to match the customer's needs.

Please contact us to discuss your requirements in further detail.

Key benefits

- Lowest batch to batch variation in the industry
- Stable material with consistent performance
- Customised or standard designs

Key features

- Low dielectric constant
- Low dielectric loss
- High piezoelectric voltage constant

Applications

- High frequency medical imaging
- Miniaturised triaxial accelerometers
- Integrated miniaturised phased array ultrasound scanners

Contact

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Material properties

Electrical	Symbol	TF2400
Relative dielectric constant at 1 kHz	K_{33}^T	320
Dielectric dissipation factor at 1 kHz	$\tan \delta$	0.8×10^{-3}
Electromechanical		
Coupling coefficients	k_p	27
	k_t	50
Piezoelectric charge coefficient	d_{33}	150 pC/N
	d_{31}	-35
Piezoelectric voltage coefficient	g_{33}	53×10^{-3} Vm/N
	g_{31}	-13
Mechanical		
Porosity	ρ	0.18
Mechanical quality factor	$Q_{m,t}^E$	100

Note: Due to continuous process improvement, specifications are subject to change without notice.
Please be aware that extreme dimensions and geometries can lead to exaggeration in tolerances in all materials.