Aerospace
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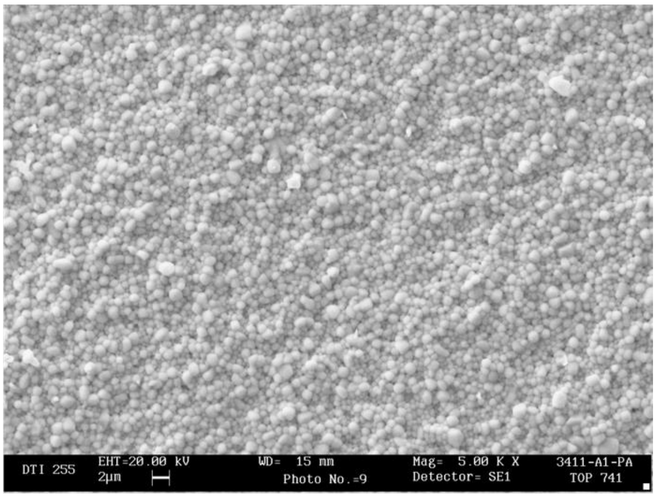
Ferroperm™ Piezoelectric

Pz34 modified lead titanate with high anisotropy



Microstructure of Pz34 at a magnification of 5000 times

A modified lead titanate with high anisotropy and small grain size

Pz34 is modified lead titanate exhibiting a large electromechanical anisotropy, low dielectric constant and properties which are very stable with time, temperature, and frequency. In contrast to other commercial lead titanates, Pz34 has an extremely small and uniform grain size. Pz34 is furthermore significantly more corrosion stable than other similar materials due to its unique chemical composition.

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 ±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

- Large electromechanical anisotropy
- Low dielectric constant

Applications

- Single element medical transducers
- High-frequency ultrasonic transducers
- Pyroelectric sensors
- Low-frequency ultrasonics, where cross-coupling from radial modes must be avoided

Contact

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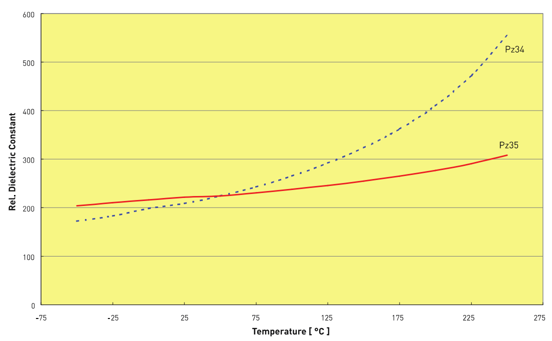
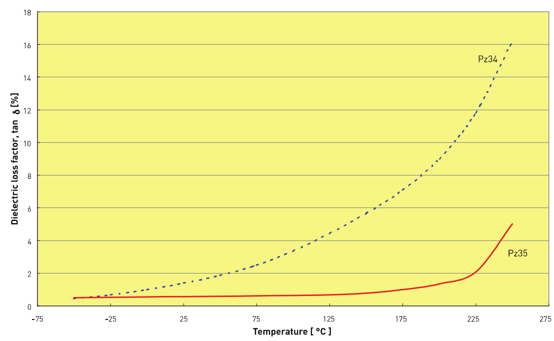
Material properties

Electrical	Symbol	Pz31
Relative dielectric permittivity 1 kHz	K_{33}^{T}	210
Dielectric dissipation factor at 1 kHz	$\tan\delta$	14×10^{-3}
Curie temperature	$T_C >$	400 °C
Recommended working range	$<$	150 °C
Electromechanical		
Coupling factor, planar	k_p	0.07
	k_t	0.40
Piezoelectric charge coefficient	d_{33}	50 pC/N
Mechanical		
Mechanical Quality Factor	$Q_{m,t}$	>500
Density	ρ	7.55 g/cm³

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.



Temperature dependence of the free dielectric constant of Pz34 in comparison with another anisotropic material, Pz35, from Ferroperm.



Temperature dependence of the dielectric loss, tanδ, Pz34 in comparison with another anisotropic material, Pz35, from Ferroperm.