



## Ferroperm™ Piezoelectric ceramics

# Pz36 Low acoustic impedance PZT

### A new type of piezoceramic material with very low acoustic impedance

The new Ferroperm Pz36 material is developed primarily with the aim of having very low acoustic impedance and at the same time high thickness coupling coefficient and permittivity. It has furthermore no oil or polymer infiltration, and is therefore able to operate at higher temperatures than traditional lead-meta niobates.

Pz36 has low losses and high a Qm-value and can therefore be used alone or in combination with Pz37 in NDT applications and other applications, where the acoustic matching is critical.

### 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

- High thickness coupling coefficient
- High permittivity

### Applications

- NDT transducers
- Medical transducers
- Underwater transducers
- Low frequency Doppler flow-meters

### Contact

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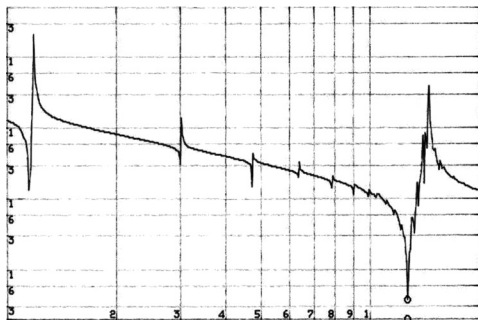
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### Material properties

Electrical	Symbol	Pz36
Relative dielectric permittivity at 1 kHz	$K_{33}^T$	610
Dielectric dissipation factor at 1 kHz	$\tan \delta$	$3 \times 10^{-3}$
Curie temperature	$T_c$	330 °C
Recommended working range		230 °C
Electromechanical		
Coupling factors	$k_p$	0.26
	$k_t$	0.52
Piezoelectric charge coefficient	$d_{33}$	230 pC/N
Frequency constant, thickness	$N_t$	1270 Hz m
Mechanical		
Mechanical Quality Factor*	$Q_{m,t}^E$	500
Acoustic impedance	$Z_a$	14 Mrayl
Density	$\rho$	6.0 g/cm <sup>3</sup>

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.

\* $Q_{m,t}$  may vary with frequency



Impedance plot for a circular Pz36 disc. Dimensions are OD15 mm TH 1 mm. The frequency sweep is from 100 kHz to 2 MHz. The disc shows a planar resonance at approximately 115 kHz, with a planar coupling coefficient,  $k_p$ , of only 26%. The thickness resonance at approximately 1270 kHz with a coupling factor,  $k_t$ , of 52%.