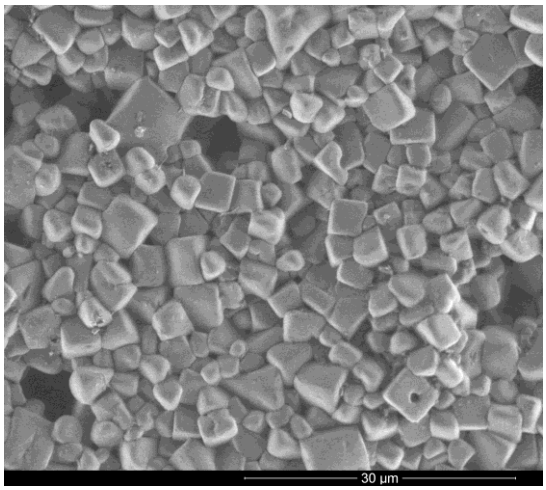
Aerospace
Defence
Energy
Industrial
Medical

Ferroperm™ Piezoelectric

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 ±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

CTS Ferroperm

Porthusvej 4, DK-3490
Kvistgaard
Denmark
Tel: +45 49 12 71 00

e-mail: pz@ctscorp.com

www.ferropermpiezoceramics.com

Aerospace
Defence
Energy
Industrial
Medical

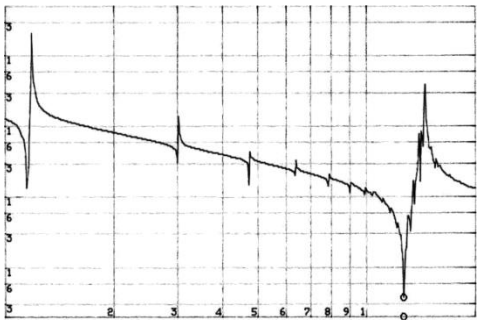
Ferroperm™ Piezoelectric

Pz36 Low acoustic impedance PZT

Material properties

Electrical	Symbol	Unit	Pz36	Pz37	Pz35
Relative dielectric permittivity (free, 1 kHz)	K_{33}^T		850	1200	220
Dielectric dissipation factor at 1 kHz	$\tan\delta$		3×10^{-3}	17×10^{-3}	6×10^{-3}
Curie temperature	$T_C >$	°C	330	350	500
Recommended working range	<	°C	230	250	200
Electromechanical					
Coupling factor, planar	k_p		0.37	0.38	0.05
Coupling factor, thickness	k_t		0.51	0.52	0.34
Piezoelectric charge coefficient	d_{33}	pC/N	260	380	100
Frequency constant, thickness	N_t	Hz m	1530	1450	1550
Mechanical					
Mechanical Quality Factor*	$Q_{m,t}$		500	50	15-20
Acoustic impedance	Z_a	Mrayl	19	18	17
Density	ρ	g/cm3	6.3	6.4	5.6

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.
Pz31, Pz36, Pz37, Pz39 are a new family of mateials containing a porous structure. Tolerances might therefore vary more than standard, and be more dependent on size and geometry.
*$Q_{m,t}$ 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 discs shows a planar resonance at approximately 115 kHz, with a planar coupling coefficient, kp, of only 26%. The thickness resonance at approximately 1270 kHz with a coupling factor, kt, of 52%.