

Pz31

A new type of piezoceramic material with very low acoustic impedance

The new Ferroperm Pz31 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 metaniobates.

Pz31 is therefore the optimum choice for NDT applications and other applications, where the acoustic matching is critical.

Typical applications are:

- Broadband NDT transducers
- Broadband medical transducers
- Underwater transducers
- Low frequency Doppler flow-meters

Main characteristics of Ferroperm Pz31 (preliminary)

	Symbol	Unit	Pz31	K81
Electrical Properties				
Relative dielectric permittivity (free, 1 kHz)	K_{33}^T		295	300
Relative dielectric permittivity (clamped)	K_{33}^S		195	270
Dielectric dissipation factor (1 kHz)	$\tan \delta$	10^{-3}	4	10
Curie temperature	$T_C >$	°C	330	400
Recommended working range	$<$	°C	230	(200)
Electromechanical Properties				
Coupling factor, planar	k_p		30	< 10
Coupling factor, thickness	k_t		52.4	30
Piezoelectric charge coefficient	d_{33}	pC/N	160	85
Frequency constant, thickness	N_t	Hz m	1518	1525
Mechanical Properties				
Mechanical quality factor	$Q_{m,t}$		900	< 15
Acoustic impedance	Z_a	MRayl	18.9	19.0
Density	ρ	g/cm ³	6.22	6.2

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

Ferroperm Piezoceramics A/S is a company completely dedicated to the production of high quality piezoelectric ceramics for our main strategic markets: Vibration sensors, flow-meters, medical diagnostics, underwater acoustics, and NDT.

We have more than 45 years of experience in production of advanced piezoelectric ceramics, and employ today more than 50 motivated people in management, production, development and research. We have extensive experience in development and improvement of products, which can fulfil customers' individual needs.

For more information on Ferroperm and our materials please visit our Internet page
<http://www.ferroperm.net>