2 Material properties

Preferred application			Resonant circuit inductors				
Material			U 17[1]	K 12[1]	K 1	M 33[2]	N 48
Base material			NiZn	NiZn	NiZn	MnZn	MnZn
Color code (adjuster)			gray	yellow	violet	white	—
	Symbol	Unit					
Initial permeability (T = 25 °C)	μ_i		10 ± 30 %	26 ± 25 %	80 ± 25 %	750 ± 25 %	2300 ± 25 %
Meas. field strength Flux density (near saturation) (f = 10 kHz)	H B_S (25 °C) B_S (100 °C)	A/m mT mT	10000 180 170	2000 230 210	5000 310 280	2000 400 310	1200 420 310
Coercive field strength (f = 10 kHz)	H_c (25 °C) H_c (100 °C)	A/m A/m	1900 1800	450 410	380 350	80 65	26 19
Optimum frequency range		MHz	10 … 220	3 … 40	1,5 … 12	0,2 … 1,0	0,001 … 0,1
Relative loss factor at f_{min} at f_{max}	$\tan\delta/\mu_i$	10^{-6} 10^{-6}	< 100 < 1700	< 150 < 600	< 40 < 120	< 12 < 20	2,7 4,2
Hysteresis material constant	η_B	10^{-6}/mT	< 27	< 45	< 36	< 1,8	< 0,4
Curie temperature	T_C	°C	> 550	> 450	> 400	> 200	> 170
Relative temperature coefficient at 25 ... 55 °C at 5 ... 20 °C	α_F	10^{-6}/K	 25 ... 50 45 ... 20	 3 ... 14 12 ... 0	 2 ... 8 7 ... 1	 0,5 ... 2,6 —	 0,4 ... 0,5 0,7 ... 0,5
Mean value of α_F at 25 ... 55 °C		10^{-6}/K	37	9	4	1,6	0,50
Density (typical values)		kg/m³	4400	4600	4650	4500	4700
Disaccommodation factor at 25 °C	DF	10^{-6}	—	—	20	8	2
Resistivity	ρ	Ωm	10^5	10^5	10^5	5	3
Core shapes			P, Double aperture	P, Ring	RM, P, Ring, P core half	RM, P, Ring, Double aperture, P core half	RM, P
Other material properties (graphs) see page			49	51	53	55	57

1) Perminvar ferrite: irreversible variations in quality and permeability may occur in case of strong fields in the core (> 1500 A/m). In the case of shape-related dimensions, these dimensions may be exceeded by up to 5%.
2) For threaded cores μi = 600 ± 20%