

Injection Moulded Material Properties and Application Data

Material:	Silicon-Iron, soft magnetic	
Grade:	3% Si-Fe	
Nominal composition, %:	Si	3.0
	C	0.01 max.
	Fe	Balance

Typical properties	as sintered
Density (g/cm ³)	7.60 – 7.65
Hardness, HV1	approx. 150
Elastic Modulus (GPa)	160
Elongation (%)	26
Yield Strength (MPa, N/mm ²)	300 – 350
As Sintered Surface Finish	R _a < 1.6
Coefficient of Expansion 20 – 100 °C	12 · 10 ⁻⁶ /K
Specific Thermal Conductivity	31 W/Km

Magnetical and electrical properties

Max. Induction, B _m	1.4 – 1.5 Tesla = Vs/m ²	14'000 – 15'000 G
Residual Induction, B _r	0.8 – 0.95 Tesla = Vs/m ²	8'000 – 9'500 G
Coercive Field, H _c	40 – 50 A/m	0.5 – 0.62 Oe
Max. Permeability, μ _{max}	0.0090 – 0.0094 Tm/A =Vs/Am	7200 – 7500 G/Oe
Curietemperatur	750 °C	
Specific Electric Resistivity	0.4 Ω mm ² /m	

Uses, remarks

3% Si-Fe has relatively high Permeability. Max Induction is only slightly less than that of pure Iron, while the Coercive Field is markedly below that of pure Iron. This soft magnetic material is uses for poles and relay parts where response time on flux change is important.