

PHYTHERM 55

PHYTHERM 55 is an iron-nickel soft magnetic alloy suitable for magnetic shunts to compensate temperature effects in permanent magnet systems (tachometers, watt-hourmeters ..). Phyttherm 55 has a very high variation of saturation flux density versus temperature within the range of -40/+60°C.

1. CHEMICAL COMPOSITION (Weight %)

Element	Ni	Fe
Typical Value	30	Bal

2. PHYSICAL PROPERTIES

Density (g/cm ³)	Resistivity (μΩ.cm)	Melting T° (°C)	Coefficient of expansion between 0-100°C (10 ⁻⁶ /°C)	Specific heat (J/kg/°C)
8,1	80	1430	10	120

3. MAGNETIC PROPERTIES

Typical Curie Temperature T_c = 55°C. DC typical magnetic properties

	Hard	Annealed
B (100Oe) at -20°C (Gauss)	4000-5000	4500-5500
B (100Oe) at 0°C (Gauss)	2750-4000	3500-4500
B (100Oe) at 20°C (Gauss)	1750-3000	2250-3250
B (100Oe) at 40°C (Gauss)	750-1750	1000-1750
B (100Oe) at 60°C (Gauss)	≤ 1000	≤ 750

4. MECHANICAL CHARACTERISTICS (typical values)

Metallurgical state	Hardness (Hv)	Tensile strength (MPa)	Elongation %	Grain size
Hard	275	1000	3	-
Annealed	150	500	40	8

5. SURFACE

- Surface free from scratches or oxidation or defects that might be detrimental to use

6. DIMENSIONS

Thickness (mm)	Tolerance (mm)	Width tolerance (mm)		
		W ≤ 100	100 < W ≤ 150	150 < W ≤ 190
0,3 – 0,5	+/- 0,02	-0/+0,2	-0/+0,3	-0/+0,4
0,5 - 1	+/- 0,03	-0/+0,2	-0/+0,3	-0/+0,4
1 – 1,5	+/- 0,04	-0/+0,4	-0/+0,5	-0/+0,5

7. FORM

Temper	Hard	Annealed
Edge burr	≤ 5% of the thickness	≤ 10% of the thickness
Edgewise curvature	≤ 3mm/m	≤ 3mm/m

8. PACKAGING

- Packaging must be suitable to prevent the metal from damage during transportation or stocking in normal conditions.

8.1. Coils

Typical coils weight	For 500 Kgs ordered	For 1000 Kgs ordered	For 3000 Kgs ordered
	≈ 0,8 Kg/mm wide	≈ 1,5 Kg/mm wide	≈ 4,5 Kg/mm wide

- Internal diameter : 400mm with inner core for thickness ≤ 0,3mm
- Outer diameter ≤ 1100mm
- Please contact us regarding dimensions and minimum order quantity

8.2. Sheets

Lengths	Tolerance
1000 ≤ mm ≤ 3000	-0/+10mm

9. CERTIFICATE

- Chemical composition, mechanical properties (hardness, grain size), magnetic properties

10. INTERNATIONAL SPECIFICATIONS

IEC404.

In case of other requirement, please do not hesitate to contact us