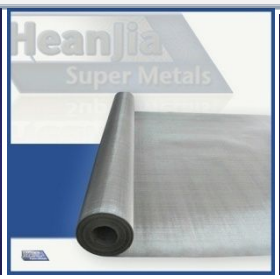
Alloy 4750 (UNS K94840)






Alloy 4750 has high magnetic permeability and saturation flux density. Suitable magnetic and electric properties. It is a commonly used metal in aircraft and aerospace engineering.

Chemical Composition

Nickel	48 %
Chromium	0.10 %
Manganese	0.80 %
Silicon	0.30 %
Carbon	0.05 %
Phosphorous	0.025 %
Sulfur	0.025 %
Iron	Rem %

Tensile Strength

ANNEALED	85,000 MAX
1/4 HARD	90,000 TO 115,000
1/2 HARD	105,000 TO 125,000
HARD	120,000 MIN.

Hardness

ANNEALED	70 MAX
1/4 HARD	78 TO 83
1/2 HARD	84 TO 88

Linear Coefficient of Thermal Expansion

30 oC to 100 oC	9.4 cm/ cm oC x 10-6
30 oC to 200 oC	9.4 cm/ cm oC x 10-6
30 oC to 300 oC	8.8 cm/ cm oC x 10-6
30 oC to 350 oC	9.0 cm/ cm oC x 10-6
30 oC to 400 oC	8.7 cm/ cm oC x 10-6
30 oC to 425 oC	8.9 cm/ cm oC x 10-6
30 oC to 450 oC	9.0 cm/ cm oC x 10-6

30 oC to 500 oC	9.4 cm/ cm oC x 10-6
30 oC to 550 oC	10.2 cm/ cm oC x 10-6
30 oC to 600 oC	10.4 cm/ cm oC x 10-6
30 oC to 700 oC	11.3 cm/ cm oC x 10-6
30 oC to 800 oC	12.1 cm/ cm oC x 10-6
30 oC to 900 oC	13.0 cm/ cm oC x 10-6
30 oC to 1000 oC	13.9 cm/ cm oC x 10-6

Modulus of Elasticity

After process annealing at 871oC, bar, in tension	22 x 10(3) ksi
After process annealing at 871oC, bar, in torsion	7.60 x 10(3) ksi
Cold drawn in torsion, bar	7.80 x 10(3) ksi
Cold drawn in tension, bar	24 x 10(3) ksi
Cold rolled, tension, strip	24 x 10(3) ksi
Forming and deep drawn, tension, strip	24 x10(3) ksi
Hydrogen annealing at 1177oC in tension, bar	22.5 x 10(3) ksi
Hydrogen annealing at 1177oC in torsion, bar	7.50 x 10(3) ksi
Electric resistivity	290 ohm-cir-mil/ft
Temperature coefficient of electrical resistance	20 x 10(-4) ohm/ohm/oF
Curie temperature	840 to 930 oF
Melting point	2600oF

Magnetic Properties

Magnetic Characteristics following ASTM A596 standards

Properties	Bar	Strip	
		0.014 inch	0.025-0.125 inch
Initial Permeability (B100)	6500	12000	8000
Max. Permeability	75000	150000	90000
Residual Magnetism (Gausses	9000	9000	9000
Coercive Force, Oersteds from 10,000 Gausses	0.04/0.07	0.05-0.06	0.004-0.007
Saturation Induction from H-100 Oersteds, Gausses	15000	15000	15000

Flux & Coercive Force

Treatment	Remnant Flux Gausses	Coercive Force Oersteds
Mill Process Annealing	6300 Gausses	0.85 Oersteds
1450°F-2h-Dry H2	9900 Gausses	0.48 Oersteds
1600°F-2h-Dry H2	10200 Gausses	0.32 Oersteds
17500°F-2h-Dry H2	10300 Gausses	0.18 Oersteds
2050°F-2h-Dry H2	10900 Gausses	0.05 Oersteds

Available Forms

Wire, Strip, Foil, Plate, Sheet, Wiremesh