

**Technical Data Sheet****ATI 4750™****Nickel Alloy: Soft Magnetic Alloy**

(UNS K94800 or K95000)

**GENERAL PROPERTIES**

The alloy produces good magnetic properties, wide latitude to control hysteresis loop shape via recrystallization modes. Applications for this alloy range from electro- mechanical relay cores, to very low current holding magnets for natural gas safety valves, to manufacture of magnetic shielding used in multiple-wall shielding to produce very low field levels in combination with Moly Permalloy. Also the material can be used in high frequency transformer applications - notably in the past in telecommunication applications. ATI 4750 alloy is sold in two versions: "Rotor" a fine grained, equalized structure with a cube on face texture for rotating equipment, and "Transformer" a large grained directional, secondarily recrystallized twinned structure ideal for transformers.

**TYPICAL COMPOSITION**

Element	Weight%
C	0.010 max
Mn	0.45
P	0.03 max
S	0.01 max
Si	0.30
Cr	0.10 max
Ni	48.25
Mo	0.30 max
Co	0.50 max
Cu	0.50 max
Fe	Balance

**SPECIFICATIONS**

ASTM F-30, AMS 7717, AMS 7719

**PRODUCT FORMS****Strip** - Width: Up to 24" (609 mm)

Thickness: 0.004" - 0.060" (0.10 mm - 1.52 mm).

Available from ATI.

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**APPLICATIONS**

Magnetic relay parts, magnetic shielding, pole pieces, specialty motor stators and rotors, electric transformers, magnetic amplifiers.

**MECHANICAL AND /PHYSICAL PROPERTIES**

Typical Annealed Properties			
0.2% Yield Strength	30 ksi (206 MPa)	Density	0.295 lb/in <sup>3</sup> (8.17 g/cm <sup>3</sup> )
Tensile Strength	73 ksi (503 MPa)	Electrical Resistivity	50 microhm cm
Elongation	38% in 2" (51mm)	Grain Size	For Rotor Grade: 8-9 Transformer Grades: 2
Hardness	15T 80		

Thermal Expansion Coefficient		
30-350°C	8.5 - 9.2	µm/m°C
30-425°C	9.6 - 10.0	µm/m°C
30-450°C	9.7 - 10.4	µm/m°C

DC Magnetic Properties 0.006<t<0.025" (0.1524<t<0.635mm)	
µ @ 40 gauss	13,500
µ @ 100 gauss	18,500
µ maximum	180,000
Hc (max)	0.05 Oe
Hc (min)	0.02 Oe
Br	9,500 gauss

Further magnetic properties are available on request - please specify text requirement.