

BRIGHTRAY® alloy 35 is a nickel-iron-chromium electrical-resistance alloy for use at operating temperatures up to 1920°F (1050°C). It is similar to BRIGHTRAY alloy F but with rare-earth additions for greater resistance to oxidation under conditions of frequent switching or wide temperature fluctuations. The alloy has a high temperature coefficient of resistance. BRIGHTRAY alloy 35 is used for heating elements in domestic appliances and industrial equipment.

## Physical Constants & Thermal Properties

**Table 2** - Physical Constants & Thermal Properties

Density, lb/in <sup>3</sup> .....	0.301
g/cm <sup>3</sup> .....	8.33
Melting Range, °F.....	2440-2520
°C .....	1340-1380
Specific Heat, Btu/lb•°F .....	0.125
J/kg•°K .....	523
Permeability at 200 Oersted (15.9 kA/m) .....	1.026
Coefficient of Expansion, 68-212°F, 10 <sup>-6</sup> in/in•°F.....	7.2
20-100°C, μm/m•°C .....	12.9
Electrical Resistivity, ohm•circ mil/ft .....	614
μohm•m .....	1.02
Temp. Coefficient of Resistance,	
68-932°F, 10 <sup>-6</sup> ohm/ohm•°F.....	180
20-500°C, μohm/ohm•°C .....	330

**Table 1** - Limiting Chemical Composition<sup>a</sup>, %

Nickel (Plus Cobalt) .....	34-37
Chromium .....	18-21
Silicon .....	1.0-3.0
Manganese .....	1.0 max.
Carbon .....	0.15 max.
Sulfur .....	0.01 max.
Iron .....	Balance*

<sup>a</sup> Also contains rare-earth additions.

\*Reference to the 'balance' of a composition does not guarantee this is exclusively of the element mentioned but that it predominates and others are present only in minimal quantities.

## Available Products

BRIGHTRAY alloy 35 is available as wire.

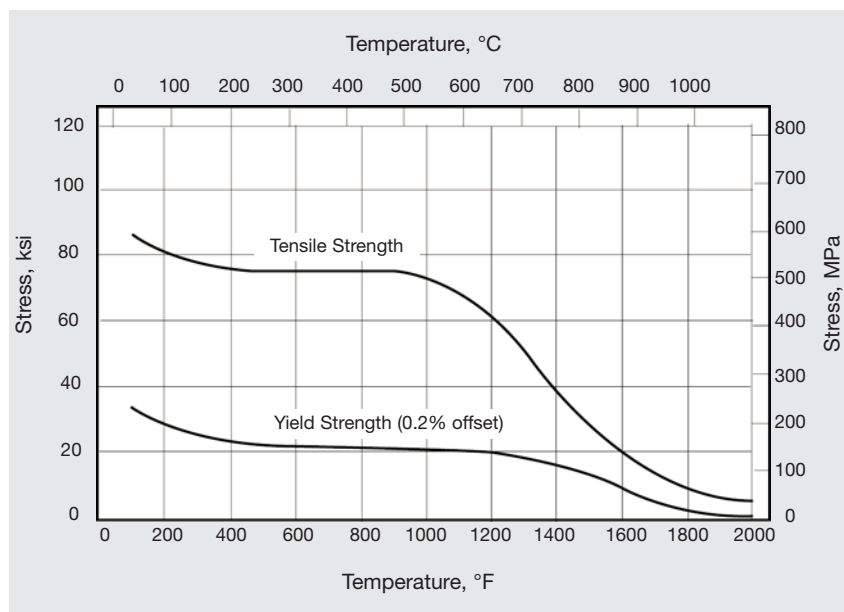
## Typical Mechanical Properties

**Table 3** - Typical Mechanical Properties of Annealed BRIGHTRAY alloy 35

Tensile Strength, ksi .....	88
MPa .....	610
Yield Strength (0.2% Offset), ksi .....	36
MPa .....	250

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**Figure 1.** Typical mechanical properties of annealed BRIGHTRAY alloy 35

**BRIGHTRAY® alloy 35**





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