

BRIGHTRAY® alloy C (UNS N06003/W. Nr. 2.4869) is a nickel-chromium electrical-resistance alloy for use at operating temperatures up to 2100°F (1150°C). It contains rare-earth additions for increased oxidation resistance, especially under conditions of frequent switching or wide temperature fluctuations. The alloy has a low temperature coefficient of resistance, making it suitable for control resistors. BRIGHTRAY alloy C 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> .....	0.308
g/cm <sup>3</sup> .....	8.53
Melting Range, °F.....	2520-2550
°C .....	1380-1400
Specific Heat, Btu/lb•°F .....	0.100
J/kg•°K .....	419
Permeability at 200 Oersted (15.9 kA/m) .....	1.0005
Coefficient of Expansion, 68-212°F, 10 <sup>-6</sup> in/in•°F.....	6.9
20-100°C, μm/m•°C .....	12.5
Electrical Resistivity, ohm•circ mil/ft .....	650
μohm•m .....	1.08
Temp. Coefficient of Resistance,	
68-932°F, 10 <sup>-6</sup> ohm/ohm•°F.....	78
20-500°C, μohm/ohm•°C .....	140

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

Chromium.....	19-21
Silicon.....	0.75-1.6
Iron.....	1.0 max.
Manganese .....	1.0 max.
Carbon .....	0.15 max.
Sulfur.....	0.01 max.
Nickel (Plus Cobalt) .....	Balance*

<sup>a</sup> As in UNS N06003. 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 and Specifications

BRIGHTRAY alloy C is designated UNS N06003 and W. Nr. 2.4869 and is available as wire.

Major specifications:  
DIN 17742, 17753

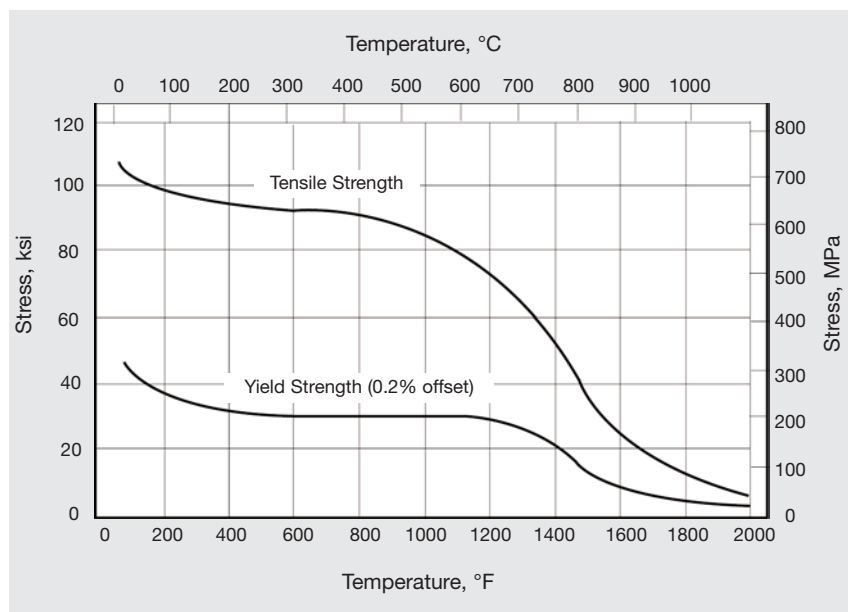
## Typical Mechanical Properties

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

Tensile Strength, ksi.....	110
MPa.....	760
Yield Strength (0.2% Offset), ksi .....	48
MPa .....	330

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





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