

Nickel 205 (UNS N02205) is wrought nickel similar to Nickel 200 but with compositional adjustments to enhance performance in electrical and electronic applications. Nickel 205 is used for the anodes and grids of electronic valves, magnetostrictive transducers, lead wires, transistor housings and battery cases.

## Physical Constants & Thermal Properties

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

|  |           |
|--|-----------|
| Density, lb/in <sup>3</sup> .....  | 0.321     |
| g/cm <sup>3</sup> .....  | 8.89      |
| Melting Range, °F.....   | 2615-2635 |
| °C .....   | 1435-1446 |
| Specific Heat, Btu/lb•°F .....   | 0.109     |
| J/kg•°K .....  | 456       |
| Curie Temperature, °F.....   | 680       |
| °C .....   | 360       |
| Permeability .....   |           |
| Ferromagnetic Coefficient of Expansion, 70-200°F, 10 <sup>-6</sup> in/in•° |           |
| F .....  | 7.4       |
| 21-93°C, μm/m•°C .....   | 13.3      |
| Thermal Conductivity, Btu•in/ft <sup>2</sup> •h•°F .....                   | 520       |
| W/m•°C .....   | 75.0      |
| Electrical Resistivity, ohm•circ mil/ft .....                              | 57        |
| μohm•m .....   | 0.005     |

**Table 1** - Limiting Chemical Composition, %

|                            |            |
|----------------------------|------------|
| Nickel (Plus Cobalt) ..... | 99.0 min.  |
| Magnesium .....            | 0.01-0.08  |
| Titanium .....             | 0.01-0.05  |
| Copper .....               | 0.15 max.  |
| Iron .....                 | 0.20 max.  |
| Carbon .....               | 0.15 max.  |
| Silicon .....              | 0.15 max.  |
| Sulfur .....               | 0.008 max. |
| Manganese .....            | 0.35 max.  |

## Typical Mechanical Properties

**Table 3** - Typical Mechanical Properties of Annealed Nickel 205

|   |     |
|---|-----|
| Tensile Strength, ksi.....              | 50  |
| MPa .....                               | 345 |
| Yield Strength (0.2% Offset), ksi ..... | 13  |
| MPa .....                               | 90  |
| Elongation, % .....                     | 45  |

## Available Products and Specifications

Nickel 205 is designated UNS N02205 and is available as sheet, strip and wire.

Major specifications:

ASTM F 1, F 3  
SAE AMS 5555

**Nickel 205**