

# HM Wire International, Inc.

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## Alloy 205 - Nickel Alloy

**Description:** Nickel Alloy 205 is a wrought nickel alloy having controlled additions of small amounts of magnesium and titanium. Alloy 205 exhibits an excellent combination of mechanical, electrical and corrosion-resistant properties. It also has good oxidation resistance.

**Applications:** Nickel Alloy 205 has been used in various electronic components such as vacuum tube components, pins, terminals, support wires, lead wires, shields, and tubes.

<b>Nominal Composition:</b>	<b>C%</b>	<b>S%</b>	<b>Cu%</b>	<b>Mg%</b>	<b>Fe%</b>	<b>Mn%</b>	<b>Si%</b>
	0.07	0.008	0.15	0.01 - 0.08	0.20	0.35	0.15
	<b>Ti%</b>	<b>Ni% + Co%</b>					
	0.01 - 0.05	99.00					

## Physical Properties

<b>Specific Gravity</b>	8.89
<b>Density</b>	0.3210 lb/cu in
<b>Mean Specific Heat</b>	0.1080 Btu/lb/°F
<b>Mean CTE - 77 to 212°F</b>	$7.22 \times 10^{-6}$ in/in/°F
<b>Thermal Conductivity - 73°F</b>	306.0 BTU-in/hr/ft <sup>2</sup> /°F
<b>Modulus of Elasticity - In Tension</b>	$30.0 \times 10^3$ ksi
<b>Electrical Resistivity - 70°F</b>	57.00 ohm-cir-mil/ft
<b>Temp. Coeff. Of Electrical Resistance</b>	$22.2$ to $27.8 \times 10^{-4}$ Ohm/Ohm/°F
<b>Curie Temperature</b>	680°F
<b>Melting Range</b>	2620°F

## Mechanical Properties

<b>Condition</b>	<b>Ultimate Tensile Strength</b>	<b>Yield Strength</b>	<b>% Elongation in 2"</b>
	<b>ksi</b>	<b>ksi</b>	
<b>Rod</b>			
Cold Drawn	90	72	20
Cold Drawn & Annealed	70	30	45
<b>Wire</b>			
Cold Drawn & Annealed	70	32	40
Regular Temper	122	118	10
Spring Temper	135	120	8
<b>Strip</b>			
Annealed	65	25	35
Cold Rolled	110	95	5

\*To be used as a guideline only.