



ASM Aerospace Specification Metals Inc.



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## Special Metals NIMONIC™ Alloy 901

**Subcategory:** Metal; Nickel Base; Superalloy

**Key Words:** Nickel-Chromium Alloy; Werkstoff Nr. 2.4662, UNS N09901; BS HR53; SAE AMS 5660, 5661; WL Nr. 2.4662; AFNOR Z8 NC DT42; AECMA Pr EN 2176-2178

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	Max 0.35	Cu	Max 0.5	Ni	40 - 45
C	Max 0.1	Fe	33	S	Max 0.03
Co	Max 1	Mn	Max 0.5	Si	Max 0.4
Cr	11 - 14	Mo	5 - 6.5	Ti	2.8 - 3.1

### Material Notes:

Nickel content above includes cobalt; iron content as remainder. A nickel-iron-chromium alloy containing titanium and aluminum for precipitation hardening and molybdenum for solid-solution strengthening. The alloy has high yield strength and creep resistance at temperatures to about 1110°F (600°C). A substantial iron content enables the alloy to combine high strength with good forging characteristics. Used in gas turbines for discs and shafts. Standard product form is round.

Data provided by the manufacturer, Special Metals.

Physical Properties	Metric	English	Comments
Density	<u>8.14 g/cc</u>	0.294 lb/in <sup>3</sup>	

### Mechanical Properties

Tensile Strength, Ultimate	<u>1200 MPa</u>	174000 psi	Precipitation Hardened. Value at room temperature.
Tensile Strength, Ultimate at Elevated Temperature	<u>1030 MPa</u>	149000 psi	Precipitation Hardened prior to test; 550°C
Tensile Strength, Yield	<u>875 MPa</u>	127000 psi	Precipitation Hardened. Value at room temperature; 0.2% offset.
Tensile Strength, Yield at Elevated Temperature	<u>800 MPa</u>	116000 psi	Precipitation Hardened prior to test; 0.2% offset; 550°C

Elongation at Break	<a href="#"><u>15 %</u></a>	15 %	Precipitation Hardened
Elongation at Break at Elevated Temperature	<a href="#"><u>10 %</u></a>	10 %	Precipitation Hardened prior to test.; 550°C

### Electrical Properties

Electrical Resistivity	<a href="#"><u>0.000112 ohm-cm</u></a>	0.000112 ohm-cm	
Magnetic Permeability	1.013	1.013	at 200 oersted (15.9 kA/m)

### Thermal Properties

CTE, linear 20°C	<a href="#"><u>13.5 μm/m-°C</u></a>	7.5 μin/in-°F	20-100°C
Specific Heat Capacity	<a href="#"><u>0.431 J/g-°C</u></a>	0.103 BTU/lb-°F	
Melting Point	1280 - 1345 °C	2340 - 2450 °F	
Solidus	<a href="#"><u>1280 °C</u></a>	2340 °F	
Liquidus	<a href="#"><u>1345 °C</u></a>	2450 °F	

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.