



ASM Aerospace Specification Metals Inc.

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Special Metals INCONEL® Alloy 617

Subcategory: Metal; Nickel Base; Superalloy

Key Words: UNS N06617; ASME SB-166, Boiler Code Sections I, VIII; AMS 5887, AMS 5888, AMS 5889; ASTM B166

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	0.8 - 1.5	Cu	Max 0.5	Ni	Min 44.5
B	Max 0.006	Fe	Max 3	S	Max 0.015
C	0.05 - 0.15	Mn	Max 1	Si	Max 1
Co	10 - 15	Mo	8 - 10	Ti	Max 0.6
Cr	20 - 24				

Material Notes:

A nickel-chromium-cobalt-molybdenum alloy with an exceptional combination of metallurgical stability, strength, and oxidation resistance at high temperatures. Resistance to oxidation is enhanced by an aluminum addition. The alloy also resists a wide range of corrosive aqueous environments. Used in gas turbines for combustion cans, ducting, and transition liners; for petrochemical processing; for heat-treating equipment; and in nitric acid production. Standard product forms are round, forging stock, extruded section, plate, sheet, strip, pipe, tube, and wire.

Data provided by the manufacturer, Special Metals.

Physical Properties	Metric	English	Comments
Density	<u>8.36 g/cc</u>	0.302 lb/in ³	
Mechanical Properties			
Tensile Strength, Ultimate	<u>710 MPa</u>	103000 psi	Solution Annealed. Value at room temperature.
Tensile Strength, Ultimate at Elevated Temperature	<u>570 MPa</u>	82700 psi	Solution Annealed prior to test; 650°C
Tensile Strength, Yield	<u>340 MPa</u>	49300 psi	Solution Annealed. Value at room temperature; 0.2% offset.

Tensile Strength, Yield at Elevated Temperature	220 MPa	31900 psi	Solution Annealed prior to test; 0.2% offset; 650°C
Elongation at Break	62 %	62 %	Solution Annealed
Elongation at Break at Elevated Temperature	50 %	50 %	Solution Annealed prior to test.; 650°C

Electrical Properties

Electrical Resistivity	0.000122 ohm-cm	0.000122 ohm-cm
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Thermal Properties

CTE, linear 20°C	11.6 μm/m-°C	6.44 μin/in-°F	20-100°C
Specific Heat Capacity	0.419 J/g-°C	0.1 BTU/lb-°F	
Thermal Conductivity	13.6 W/m-K	94.4 BTU-in/hr-ft ² -°F	
Melting Point	1330 - 1380 °C	2430 - 2520 °F	
Solidus	1330 °C	2430 °F	
Liquidus	1380 °C	2520 °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.