



ASM Aerospace Specification Metals Inc.



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## Special Metals INCONEL® Alloy 625

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

**Key Words:** ASME SB-443, SB-444, SB-446, SB-564, Boiler Code Sections I, III, VIII, IX; AFNOR NC 22 D Nb; VdTUV 499, AMS 5581, AMS 5599, AMS 5666, AMS 5837; DIN 17744, 17750-17752, 17754; Werkstoff Nr. 2.4856; NACE MR-01-75, UNS N06625; BS 3072, 3074, 3076 (NA21); ASTM B443, ASTM B444, ASTM B446, ASTM B564, ASTM B704, ASTM B705, ASTM B751

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	Max 0.4	Mn	Max 0.5	P	Max 0.015
C	Max 0.1	Mo	8 - 10	S	Max 0.015
Co	Max 1	Nb	3.15 - 4.15	Si	Max 0.5
Cr	20 - 23	Ni	Min 58	Ti	Max 0.4
Fe	Max 5				

### Material Notes:

Niobium content above includes tantalum. A nickel-chromium-molybdenum alloy with an addition of niobium that acts with the molybdenum to stiffen the alloy's matrix and thereby provide high strength without a strengthening heat treatment. The alloy resists a wide range of severely corrosive environments and is especially resistant to pitting and crevice corrosion. Used in chemical processing, aerospace and marine engineering, pollution-control equipment, and nuclear reactors. Standard product forms are round, flats, forging stock, extruded section, pipe, tube, plate, sheet, strip, and wire.

Data provided by the manufacturer, Special Metals.

Physical Properties	Metric	English	Comments
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Density	<u>8.44 g/cc</u>	0.305 lb/in <sup>3</sup>	
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### Mechanical Properties

Tensile Strength, Ultimate	<u>880 MPa</u>	128000 psi	Annealed
Tensile Strength, Ultimate at Elevated Temperature	<u>760 MPa</u>	110000 psi	Annealed prior to test; 650°C
Tensile Strength, Yield	<u>460 MPa</u>	66700 psi	Annealed
Tensile Strength, Yield at Elevated Temperature	<u>290 MPa</u>	42100 psi	Annealed prior to test; 650°C

Elongation at Break	<u>50 %</u>	50 %	Annealed prior to test.
Elongation at Break at Elevated Temperature	<u>55 %</u>	55 %	Annealed prior to test.; 650°C

### Electrical Properties

Electrical Resistivity	<u>0.000129 ohm-cm</u>	0.000129 ohm-cm	
Magnetic Permeability	1.0006	1.0006	at 200 oersted (15.9 kA/m)
Curie Temperature	<u>Max -196 °C</u>	Max -321 °F	

### Thermal Properties

CTE, linear 20°C	<u>12.8 μm/m-°C</u>	7.11 μin/in-°F	20-100°C
Specific Heat Capacity	<u>0.41 J/g-°C</u>	0.098 BTU/lb-°F	
Thermal Conductivity	<u>9.8 W/m-K</u>	68 BTU-in/hr-ft <sup>2</sup> -°F	
Melting Point	1290 - 1350 °C	2350 - 2460 °F	
Solidus	<u>1290 °C</u>	2350 °F	
Liquidus	<u>1350 °C</u>	2460 °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.