SPECIAL METALS

INCONEL® alloy 622

By virtue of its contents of chromium, molybdenum, and tungsten and controlled iron, this alloy exhibits excellent resistance to both oxidizing and reducing acid environments as well as those containing mixed acids. It is particularly useful for resistance to pitting and crevice corrosion in acid-halide environments. Applications include the chemical processing, pollution control, flue gas desulfurization, waste incineration, and pulp and paper processing industries.

INCONEL® alloy 625

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

Sheet, strip, plate, round bar, flat bar, forging stock, hexagon and wire.

Pipe, tube, sheet, strip, plate, round bar, flat bar, forging stock, hexagon, wire and extruded section.

Major Specifications

USN N06022
ASTM B 366, B 564, B 574, B 575, B 619, B 622, B 626, B 751, B 775, B 829
ASME SB-366, SB-564, SB-574, SB-575, SB-619, SB-622, SB-626, SB-751, SB-775, SB-829
ASME Code Cases 2226, N-621
Werkstoff Nr. 2.4602
ISO 6207, 6208, 9723, 9724

UNS N06625
ASTM B 366, B 443, B 444, B 446, B 564, B 704, B 705, B 751, B 775, B 829
ASME SB-366, SB-443, SB-444, SB-446, SB-564, SB-704, SB-705, SB-751, SB-775, SB-829
ASME Code Cases 1409, 1935
SAE AMS 5581, 5599, 5666, 5837, 5869, MAM 5599
BS 3072, 3074, 3076 (NA21)
DIN 17744, 17750 – 17752
Werkstoff Nr. 2.4856
NACE MR-01-75
VdTÜV 499
EN 10095
ISO 6207, 6208, 9723 – 9725

Limiting Chemical Composition, %

Ni .... Remainder	W ..... 2.5 – 3.5	V ..... 0.35 max.
Cr ... 20.0 – 22.5	Co ..... 2.5 max.	S ..... 0.02 max.
Mo .. 12.5 – 14.5	C ... 0.015 max.	Si ..... 0.08 max.
Fe ..... 2.0 – 6.0	Mn ... 0.50 max.	P ..... 0.02 max.

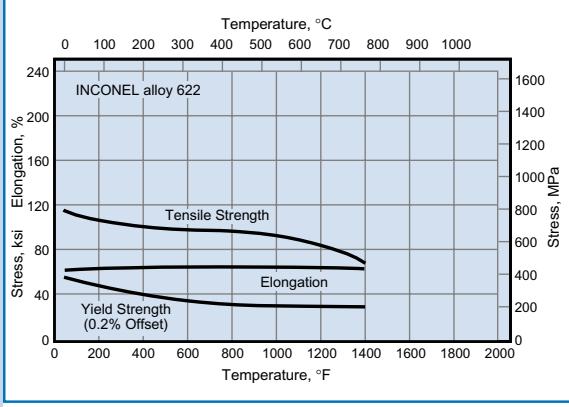
Ni ..... 58.0 min.	Fe ..... 5.0 max.	Al ..... 0.40 max.
Cr ... 20.0 – 23.0	C ..... 0.10 max.	Ti ..... 0.40 max.
Mo .... 8.0 – 10.0	Mn ... 0.50 max.	P .... 0.015 max.
Nb[a] .. 3.15 – 4.15	Si .... 0.50 max.	Co[b] .... 1.0 max.
[a]Plus Ta.	S .... 0.015 max.	[b]If determined.

Physical Constants and Thermal Properties

Density, lb/in³ (g/cm³) 0.311 (8.61)
Melting Range, °F (°C) ..... 2464 – 2529 (1351 – 1387)
Specific Heat, Btu/lb•°F (J/kg•°C) 0.091 (381)
Curie Temperature, °F (°C) ..... <-320 (<-196)
Permeability at 200 oersted (15.9 kA/m) ..... <1.001
Coefficient of Expansion, 10^{-6} in/in•°F (µm/m•°C)
70 – 200°F (21 – 93°C) 6.90 (12.42)
70 – 1000°F (21 – 538°C) 7.46 (13.43)
70 – 1800°F (21 – 982°C) 7.84 (14.11)
Thermal Conductivity[A], Btu • in/ft²•h•°F 91
W/m•°C 13.2
Electrical Resistivity[A], ohm • circ mil/ft (µΩ•cm) 730.7 (1.215)
Young's Modulus[A], 10^6 psi (GPa) 30.3 (209)
Shear Modulus[A], 10^6 psi (GPa) 11.0 (75.8)
Poission's Ratio[A] 0.30
Hardness[A], HRB 86
[A]room temperature, as annealed.

Density, lb/in³ 0.305
g/cm³ 8.44
Melting Range, °F ..... 2350 – 2460
°C ..... 1290 – 1350
Specific Heat, Btu/lb•°F 0.098
J/kg•°C 410
Curie Temperature, °F ..... <-320
°C ..... <-196
Permeability at 200 Oersted (15.9 kA/m) 1.0006
Coefficient of Expansion, 70 – 200°F, 10^{-6} in/in•°F 7.1
21 – 93°C, µm/m•°C 12.8
Thermal Conductivity, Btu • in/ft²•h•°F 68
W/m•°C 9.8
Electrical Resistivity, ohm•circ mil/ft 776
µΩ•m 1.29

Typical Mechanical Properties



(Solution Annealed)

Rupture Strength (1000 h)	ksi	MPa
1200°F / 650°C	52.0	360
1400°F / 760°C	23.0	160
1600°F / 870°C	7.2	50
1800°F / 980°C	2.6	18