

INCONEL® alloy 050 (UNS N06950) is supplied as oil country tubular goods for service in severe deep sour gas well environments, especially those high in hydrogen sulfide and carbon dioxide content. The alloy offers excellent resistance to corrosion and stress cracking and good thermal stability at an economical price. By cold work, tubes are available in a variety of strength levels.

Physical Constants and Thermal Properties

Table 2 - Physical & Thermal Properties

Density, lb/in ³	0.303
g/cm ³	8.38
Specific Heat (32-212°F), Btu lb °F	0.107
(0-100°C), J/kg °C	446
Coefficient of Expansion, 10-6 in/in °F (microm/m °C)	
70-200°F (21-93°C)	7.2 (13.0)
70-500°F (21-260°C)	7.5 (13.5)
70-800°F (21-427°C)	7.8 (14.1)
Thermal Conductivity ^A , Btu in/ft ² h °F	72.2
W/m °C	10.4
Young's Modulus ^A , 10 ³ ksi	27.9
GPa	192.4

^A Room temperature, annealed

Mechanical Properties

Table 3 - Typical Mechanical Properties
(Cold Worked Condition)

110 Grade *	
Yield Strength (0.2% Offset), ksi	110 min
MPa	759 min
Tensile Strength, ksi	115 min
MPa	793 min
Elongation, %	14 min
Hardness	C38 max
125 Grade *	
Yield Strength (0.2% Offset), ksi	125 min
MPa	862 min
Tensile Strength, ksi	130 min
MPa	896 min
Elongation, %	12 min
Hardness	C38 max

*110 and 125 are the most common grades. Other grades can be manufactured.

Table 1 - Limiting Chemical Composition, %

Nickel	50 min.
Chromium	19.0-21.0
Molybdenum	8.0-10.0
Iron	15.0-20.0
Carbon	0.02 max.
Silicon	1.0 max.
Manganese	1.0 max.
Phosphorus	0.04 max.
Sulfur	0.015 max.
Copper	0.50 max.
Niobium	0.50 max.
Cobalt	2.50 max.
Aluminum	0.40 max.
Tungsten	1.0 max.

Specifications

INCONEL alloy 050 is designated as UNS N06950 and is listed in NACE MR0175 for oil and gas service.

Available Products

INCONEL® alloy 050 is available as tube.

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INCONEL® alloy 050





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