

INCOLOY® alloy 028 (UNS N08028/W. Nr. 1.4563) is a highly alloyed austenitic stainless steel offering resistance to a variety of corrosive media. By virtue of its contents of chromium and molybdenum, the alloy offers resistance to both oxidizing and reducing acids and salts. The presence of copper increases its resistance to sulfuric acid. The alloy is used in the chemical and petrochemical processing industry. Alloy tubes are cold worked to high strength levels for downhole service in moderately corrosive deep sour gas wells.

Physical Constants and Thermal Properties

Table 2 - Physical & Thermal Properties

Density, lb/in ³	0.29
g/cm ³	8.0
Specific Heat (32-212°F), Btu lb °F	0.105
(0-100°C), J/kg °C	450
Coefficient of Expansion, 10 ⁻⁶ in/in °F (microm/m °C)	
70-200°F (21-93°C)	8.3 (15.0)
70-500°F (21-260°C)	8.8 (15.9)
70-800°F (21-427°C)	9.3 (16.8)
Thermal Conductivity ^A , Btu in/ft ² h °F	66
W/m °C	11.4
Electrical Resistivity ^A , ohm circ mil/ft	594
micro ohm m	0.99
Young's Modulus ^A , 10 ³ ksi	29.0
GPa	200

^A Annealed product, tested at room temperature

Applicable Specifications

INCOLOY alloy 028 is designated as UNS N08028 and W. Nr. 1.4563. The alloy is listed in NACE MR-01-75.

ASTM B 668, B709, B 829
ASME SB-668, SB-709, SB-829

Table 1 - Limiting Chemical Composition, %

Nickel	30.0-34.0
Chromium	26.0-28.0
Molybdenum	3.0-4.0
Iron	Balance*
Carbon	0.030 max.
Silicon	1.00 max.
Manganese	2.50 max.
Phosphorus	0.030 max.
Sulfur	0.030 max.
Copper	0.6-1.4

*Reference to the 'balance' of a composition does not guarantee this is exclusively of the element mentioned but that it predominates and others are present only in minimal quantities.

Mechanical Properties

Table 3 - Typical Mechanical Properties

(Annealed)	
Tensile Strength, ksi	73
MPa	500
Yield Strength (0.2% Offset), ksi	31
MPa	214
Elongation, %	40
Hardness (HRB)	80-90
(Cold Worked)	
Tensile Strength, ksi	130
MPa	896
Yield Strength (0.2% Offset), ksi	110
MPa	758
Elongation, %	15
Hardness (HRC)	33 max.

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