

Special Metals INCOLOY® alloy 028 Austenitic Stainless Steel

Categories: [Metal](#); [Ferrous Metal](#); [Austenitic](#); [Stainless Steel](#)

Material Notes: 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.

Information Provided by Special Metals Corporation

Key Words: UNS N08028; W. Nr. 1.4563; ASTM B 668; B709; B 829


Vendors: [Click here to view all available suppliers for this material.](#)

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Physical Properties	Metric	English	Comments
Density	8.00 g/cc	0.289 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	80 - 90	80 - 90	Annealed
Hardness, Rockwell C	33	33	Cold Worked
Tensile Strength at Break	500 MPa	72500 psi	Annealed
	896 MPa	130000 psi	Cold Worked
Tensile Strength, Yield	214 MPa	31000 psi	Annealed
	758 MPa	110000 psi	Cold Worked
Elongation at Break	15 %	15 %	Cold Worked
	40 %	40 %	Annealed
Modulus of Elasticity	200 GPa	29000 ksi	
	@Temperature 23.0 °C	@Temperature 73.4 °F	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000990 ohm-cm @Temperature 23.0 °C	0.0000990 ohm-cm @Temperature 73.4 °F	

Thermal Properties	Metric	English	Comments
CTE, linear 	15.0 µm/m-°C @Temperature 93.0 °C	8.33 µin/in-°F @Temperature 199 °F	
	15.9 µm/m-°C @Temperature 260 °C	8.83 µin/in-°F @Temperature 500 °F	
	16.8 µm/m-°C @Temperature 427 °C	9.33 µin/in-°F @Temperature 801 °F	
Specific Heat Capacity	0.450 J/g-°C @Temperature 100 °C	0.108 BTU/lb-°F @Temperature 212 °F	
Thermal Conductivity	11.4 W/m-K @Temperature 23.0 °C	79.1 BTU-in/hr-ft ² -°F @Temperature 73.4 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.030 %	<= 0.030 %	
Chromium, Cr	26 - 28 %	26 - 28 %	
Copper, Cu	0.60 - 1.4 %	0.60 - 1.4 %	
Iron, Fe	29.01 - 40.4 %	29.01 - 40.4 %	Balance
Manganese, Mn	<= 2.5 %	<= 2.5 %	
Molybdenum, Mo	3.0 - 4.0 %	3.0 - 4.0 %	
Nickel, Ni	30 - 34 %	30 - 34 %	
Phosphorous, P	<= 0.030 %	<= 0.030 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.030 %	<= 0.030 %	

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