

Carpenter Custom 630 (17-Cr-4Ni) Precipitation Hardening Stainless Steel, Condition H 1025 (Heated 552°C)

Category : Metal , Ferrous Metal , Stainless Steel , Precipitation Hardening Stainless , T S10000 Series Stainless Steel

Material Notes:

Data provided by Carpenter Technology Corporation. Custom 630 (17Cr-4Ni) is a martensitic precipitation/age-hardening stainless steel offering high strength and hardness along with excellent corrosion resistance. It has good fabricating characteristics and can be age hardened by a single-step, low temperature treatment. It has been used for a variety of applications including oil field valve parts, chemical process equipment, aircraft fittings, fasteners, pump shafts, nuclear reactor components, gears, paper mill equipment, missile fittings, and jet engine parts. Project 70® stainless Custom 630 is an improved machinability modification.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Carpenter-Custom-630-17-Cr-4Ni-Precipitation-Hardening-Stainless-Steel-Condition-H-1025-Heated-552C.php

Physical Properties	Metric	English	Comments
Density	7.80 g/cc	0.282 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	352	352	
Hardness, Knoop	382	382	Estimated from Rockwell C
Hardness, Rockwell C	38	38	
Hardness, Vickers	367	367	Estimated from Rockwell C
Tensile Strength, Ultimate	1158 MPa	168000 psi	
Tensile Strength, Yield	1117 MPa @Strain 0.200 %	162000 psi @Strain 0.200 %	
Elongation at Break	16 %	16 %	
Reduction of Area	58 %	58 %	
Modulus of Elasticity	197 GPa	28600 ksi	H900 Condition
Poissons Ratio	0.272	0.272	
Shear Modulus	77.4 GPa	11200 ksi	Calculated
Charpy Impact	54.0 J	39.8 ft-lb	V-notch

Thermal Properties	Metric	English	Comments
	11.0 µm/m-°C	6.11 µin/in-°F	

CTE, linear Thermal Properties	Metric @Temperature 21.0 - 93.0 °C	English @Temperature 69.8 - 199 °F	Comments
	11.5 µm/m-°C	6.39 µin/in-°F	
	@Temperature 21.0 - 316 °C	@Temperature 69.8 - 601 °F	
	12.0 µm/m-°C	6.67 µin/in-°F	
	@Temperature 21.0 - 427 °C	@Temperature 69.8 - 801 °F	
Specific Heat Capacity	0.419 J/g-°C	0.100 BTU/lb-°F	condition H 900
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
Thermal Conductivity	17.9 W/m-K	124 BTU-in/hr-ft ² -°F	condition H 900
	@Temperature 149 °C	@Temperature 300 °F	
	22.6 W/m-K	157 BTU-in/hr-ft ² -°F	condition H 900
	@Temperature 482 °C	@Temperature 900 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.070 %	<= 0.070 %	
Chromium, Cr	15 - 17.5 %	15 - 17.5 %	
Copper, Cu	3.0 - 5.0 %	3.0 - 5.0 %	
Iron, Fe	73 %	73 %	as remainder
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Nb + Ta	0.15 - 0.45 %	0.15 - 0.45 %	
Nickel, Ni	3.0 - 5.0 %	3.0 - 5.0 %	
Niobium, Nb (Columbium, Cb)	<= 0.45 %	<= 0.45 %	
Phosphorous, P	<= 0.040 %	<= 0.040 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.030 %	<= 0.030 %	
Tantalum, Ta	<= 0.45 %	<= 0.45 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000770 ohm-cm	0.0000770 ohm-cm	for condition H 900

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