

## Carpenter Custom 630 (17-Cr-4Ni) Precipitation Hardening Stainless Steel, Condition H 900 (Age-Hardened 482°C/1hr/AC)

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-900-Age-Hardened-482C1hrAC.php](http://www.lookpolymers.com/polymer_Carpenter-Custom-630-17-Cr-4Ni-Precipitation-Hardening-Stainless-Steel-Condition-H-900-Age-Hardened-482C1hrAC.php)

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

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	420	420	
Hardness, Knoop	450	450	Estimated from Rockwell C
Hardness, Rockwell C	44	44	
Hardness, Vickers	430	430	Estimated from Rockwell C
Tensile Strength, Ultimate	1365 MPa	198000 psi	
	793 MPa	115000 psi	
	@Temperature 538 °C	@Temperature 1000 °F	
	952 MPa	138000 psi	
	@Temperature 482 °C	@Temperature 900 °F	
Tensile Strength, Yield	1103 MPa	160000 psi	
	@Temperature 427 °C	@Temperature 801 °F	
	1186 MPa	172000 psi	
Tensile Strength, Yield	@Temperature 316 °C	@Temperature 601 °F	
	1262 MPa	183000 psi	
Tensile Strength, Yield	@Strain 0.200 %	@Strain 0.200 %	
	643 MPa	93300 psi	

Mechanical Properties	Metric @Strain 0.200 %, Temperature 538 °C	English @Strain 0.200 %, Temperature 1000 °F	Comments
	814 MPa	118000 psi	
	@Strain 0.200 %, Temperature 482 °C	@Strain 0.200 %, Temperature 900 °F	
	910 MPa	132000 psi	
	@Strain 0.200 %, Temperature 427 °C	@Strain 0.200 %, Temperature 801 °F	
	1000 MPa	145000 psi	
	@Strain 0.200 %, Temperature 316 °C	@Strain 0.200 %, Temperature 601 °F	
Elongation at Break	15 %	15 %	In 50 mm
	13 %	13 %	In 50 mm
	@Temperature 427 °C	@Temperature 801 °F	
	13 %	13 %	In 50 mm
	@Temperature 316 °C	@Temperature 601 °F	
	13 %	13 %	In 50 mm
	@Temperature 482 °C	@Temperature 900 °F	
	17 %	17 %	
	@Temperature 538 °C	@Temperature 1000 °F	
Reduction of Area	52 %	52 %	
	46 %	46 %	
	@Temperature 316 °C	@Temperature 601 °F	
	51 %	51 %	
	@Temperature 427 °C	@Temperature 801 °F	
	52 %	52 %	
	@Temperature 538 °C	@Temperature 1000 °F	
	55 %	55 %	
	@Temperature 482 °C	@Temperature 900 °F	
Modulus of Elasticity	197 GPa	28600 ksi	
Poissons Ratio	0.272	0.272	
Shear Modulus	77.4 GPa	11200 ksi	Calculated
Charpy Impact	21.0 J	15.5 ft-lb	V-notch

Mechanical Properties	Metric	English	Comments
CTE, linear	10.8 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	6.00 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	
	@Temperature 21.0 - 93.0 $^\circ\text{C}$	@Temperature 69.8 - 199 $^\circ\text{F}$	
	11.3 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	6.28 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	
	@Temperature 21.0 - 316 $^\circ\text{C}$	@Temperature 69.8 - 601 $^\circ\text{F}$	
	11.7 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	6.50 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	
	@Temperature 21.0 - 427 $^\circ\text{C}$	@Temperature 69.8 - 801 $^\circ\text{F}$	
Specific Heat Capacity	0.419 J/g- $^\circ\text{C}$	0.100 BTU/lb- $^\circ\text{F}$	condition H 900
	@Temperature 0.000 - 100 $^\circ\text{C}$	@Temperature 32.0 - 212 $^\circ\text{F}$	
Thermal Conductivity	17.9 W/m-K	124 BTU-in/hr-ft <sup>2</sup> - $^\circ\text{F}$	condition H 900
	@Temperature 149 $^\circ\text{C}$	@Temperature 300 $^\circ\text{F}$	
	22.6 W/m-K	157 BTU-in/hr-ft <sup>2</sup> - $^\circ\text{F}$	condition H 900
	@Temperature 482 $^\circ\text{C}$	@Temperature 900 $^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	$\leq 0.070\%$	$\leq 0.070\%$	
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	$\leq 1.0\%$	$\leq 1.0\%$	
Nb + Ta	0.15 - 0.45 %	0.15 - 0.45 %	
Nickel, Ni	3.0 - 5.0 %	3.0 - 5.0 %	
Niobium, Nb (Columbium, Cb)	$\leq 0.45\%$	$\leq 0.45\%$	
Phosphorous, P	$\leq 0.040\%$	$\leq 0.040\%$	
Silicon, Si	$\leq 1.0\%$	$\leq 1.0\%$	
Sulfur, S	$\leq 0.030\%$	$\leq 0.030\%$	
Tantalum, Ta	$\leq 0.45\%$	$\leq 0.45\%$	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000770 ohm-cm	0.0000770 ohm-cm	

## Contact Songhan Plastic Technology Co.,Ltd.

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