

Carpenter 20-Mo6® Stainless Steel, Tensile Properties at 93°C

Category : Metal , Ferrous Metal , Stainless Steel

Material Notes:

Data provided by Carpenter Technology Corporation. This is an austenitic stainless steel which is resistant to corrosion in hot chloride environments with low pH. It has good resistance to pitting, crevice corrosion and stress-corrosion cracking in chloride environments and is also resistant to oxidizing media. The alloy is designed for applications where better pitting and crevice-corrosion resistance are required than 20Cb-3® stainless offers. 20-Mo6® is a registered trademark of Carpenter Technology Corporation.

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http://www.lookpolymers.com/polymer_Carpenter-20-Mo6-Stainless-Steel-Tensile-Properties-at-93C.php

Physical Properties	Metric	English	Comments
Density	8.133 g/cc	0.2938 lb/in³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	600 MPa	87000 psi	
	448 MPa	65000 psi	
	@Temperature 593 °C	@Temperature 1100 °F	
	462 MPa	67000 psi	
	@Temperature 538 °C	@Temperature 1000 °F	
	490 MPa	71100 psi	
	@Temperature 482 °C	@Temperature 900 °F	
	496 MPa	71900 psi	
	@Temperature 427 °C	@Temperature 801 °F	
	510 MPa	74000 psi	
	@Temperature 371 °C	@Temperature 700 °F	
	517 MPa	75000 psi	
	@Temperature 316 °C	@Temperature 601 °F	
	531 MPa	77000 psi	
	@Temperature 260 °C	@Temperature 500 °F	
	545 MPa	79000 psi	
	@Temperature 204 °C	@Temperature 399 °F	
	572 MPa	83000 psi	
	@Temperature 149 °C	@Temperature 300 °F	

Mechanical Properties Tensile Strength, Yield	Metric 282 MPa	English 41000 psi	Comments
	@Strain 0.200 %	@Strain 0.200 %	
	186 MPa	27000 psi	
	@Strain 0.200 %, Temperature 538 °C	@Strain 0.200 %, Temperature 1000 °F	
	186 MPa	27000 psi	
	@Strain 0.200 %, Temperature 593 °C	@Strain 0.200 %, Temperature 1100 °F	
	193 MPa	28000 psi	
	@Strain 0.200 %, Temperature 482 °C	@Strain 0.200 %, Temperature 900 °F	
	200 MPa	29000 psi	
	@Strain 0.200 %, Temperature 427 °C	@Strain 0.200 %, Temperature 801 °F	
	200 MPa	29000 psi	
	@Strain 0.200 %, Temperature 371 °C	@Strain 0.200 %, Temperature 700 °F	
	214 MPa	31000 psi	
	@Strain 0.200 %, Temperature 316 °C	@Strain 0.200 %, Temperature 601 °F	
	234 MPa	33900 psi	
	@Strain 0.200 %, Temperature 260 °C	@Strain 0.200 %, Temperature 500 °F	
	255 MPa	37000 psi	
	@Strain 0.200 %, Temperature 204 °C	@Strain 0.200 %, Temperature 399 °F	
	262 MPa	38000 psi	
	@Strain 0.200 %, Temperature 149 °C	@Strain 0.200 %, Temperature 300 °F	
Elongation at Break	55 %	55 %	In 25 mm
	50 %	50 %	In 25 mm
	@Temperature 427 °C	@Temperature 801 °F	
	52 %	52 %	In 25 mm
	@Temperature 371 °C	@Temperature 700 °F	
	53 %	53 %	In 25 mm
	@Temperature 260 °C	@Temperature 500 °F	

Mechanical Properties	Metric	English	Comments
	@Temperature 538 °C	@Temperature 1000 °F	In 25 mm
	53 %	53 %	In 25 mm
	@Temperature 316 °C	@Temperature 601 °F	
	54 %	54 %	In 25 mm
	@Temperature 482 °C	@Temperature 900 °F	
	56 %	56 %	In 25 mm
	@Temperature 149 °C	@Temperature 300 °F	
	56 %	56 %	In 25 mm
	@Temperature 204 °C	@Temperature 399 °F	
	56 %	56 %	In 25 mm
	@Temperature 593 °C	@Temperature 1100 °F	
Reduction of Area	74 %	74 %	
	51 %	51 %	
	@Temperature 538 °C	@Temperature 1000 °F	
	53 %	53 %	
	@Temperature 427 °C	@Temperature 801 °F	
	53 %	53 %	
	@Temperature 482 °C	@Temperature 900 °F	
	55 %	55 %	
	@Temperature 593 °C	@Temperature 1100 °F	
	58 %	58 %	
	@Temperature 371 °C	@Temperature 700 °F	
	59 %	59 %	
	@Temperature 316 °C	@Temperature 601 °F	
	65 %	65 %	
	@Temperature 260 °C	@Temperature 500 °F	
	70 %	70 %	
	@Temperature 204 °C	@Temperature 399 °F	
	72 %	72 %	
	@Temperature 149 °C	@Temperature 300 °F	

Mechanical Properties	Metric	English	Comments
	186 GPa	27000 ksi	
Modulus of Elasticity	@Temperature 23.0 °C	@Temperature 73.4 °F	
Poissons Ratio	0.29	0.29	
	@Temperature 23.0 °C	@Temperature 73.4 °F	
Shear Modulus	72.1 GPa	10500 ksi	
	@Temperature 23.0 °C	@Temperature 73.4 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	14.8 µm/m-°C	8.22 µin/in-°F	
	@Temperature 25.0 - 100 °C	@Temperature 77.0 - 212 °F	
	15.34 µm/m-°C	8.522 µin/in-°F	
	@Temperature 25.0 - 300 °C	@Temperature 77.0 - 572 °F	
	16.01 µm/m-°C	8.894 µin/in-°F	
	@Temperature 25.0 - 500 °C	@Temperature 77.0 - 932 °F	
	17.74 µm/m-°C	9.856 µin/in-°F	
	@Temperature 25.0 - 900 °C	@Temperature 77.0 - 1650 °F	
Specific Heat Capacity	0.450 J/g-°C	0.108 BTU/lb-°F	
Thermal Conductivity	12.1 W/m-K	84.0 BTU-in/hr-ft²-°F	
	@Temperature 50.0 °C	@Temperature 122 °F	
	14.8 W/m-K	103 BTU-in/hr-ft²-°F	
	@Temperature 200 °C	@Temperature 392 °F	
	18.2 W/m-K	126 BTU-in/hr-ft²-°F	
	@Temperature 400 °C	@Temperature 752 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.030 %	<= 0.030 %	
Chromium, Cr	22 - 26 %	22 - 26 %	
Copper, Cu	2.0 - 4.0 %	2.0 - 4.0 %	
Iron, Fe	31 %	31 %	as remainder

Manganese Mn Component Elements Properties	$\leq 1.0\%$ Metric	$\leq 1.0\%$ English	Comments
Molybdenum, Mo	5.0 - 6.7 %	5.0 - 6.7 %	
Nickel, Ni	33 - 37 %	33 - 37 %	
Phosphorous, P	$\leq 0.030\%$	$\leq 0.030\%$	
Silicon, Si	$\leq 0.50\%$	$\leq 0.50\%$	
Sulfur, S	$\leq 0.030\%$	$\leq 0.030\%$	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0001082 ohm-cm	0.0001082 ohm-cm	

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