Carpenter Gall-Tough® Stainless, Annealed and Cold Drawn Bar, 10% Cold Work

Category : Metal , Ferrous Metal , Stainless Steel , T S20000 Series Stainless Steel

Material Notes:

Data provided by Carpenter Technology Corporation.Threshold Galling Stress 103 MPa (higher stress tests not performed). The avg. total volume loss on the wear test is 5 mm³ at 100 rpm.Gall-Tough® stainless is a high silicon, high manganese, nitrogen strengthened, austenitic stainless alloy which possesses superior self-mated galling resistance and metal-to-metal wear resistance. The alloy possesses higher strength and high temperature oxidation resistance than Type 304 stainless with comparable corrosion resistance, depending on the environment.Gall-Tough® is a registered trademark of Carpenter Technology Corporation.

Order this product through the following link:
http://www.lookpolymers.com/polymer_Carpenter-Gall-Tough-Stainless-Annealed-and-Cold-Drawn-Bar-10-Cold-Work.php

Physical Properties	Metric	English	Comments
Density	7.85 g/cc @Temperature 23.0 °C	0.284 lb/in³ @Temperature 73.4 °F	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1103 MPa	160000 psi	
	1441 MPa @Temperature -73.0 °C	209000 psi @Temperature -99.4 °F	
Tensile Strength, Yield	517 MPa @Strain 0.200 %	75000 psi @Strain 0.200 %	
	586 MPa @Strain 0.200 %, Temperature -73.0 °C	85000 psi @Strain 0.200 %, Temperature -99.4 °F	
Elongation at Break	45 %	45 %	in 4D
	41 % @Temperature -73.0 °C	41 % @Temperature -99.4 °F	in 4D
Reduction of Area	54 %	54 %	
	60 % @Temperature -73.0 °C	60 % @Temperature -99.4 °F	
Modulus of Elasticity	171.1 GPa @Temperature 23.0 °C	24820 ksi @Temperature 73.4 °F	
Charpy Impact	122 - 224 J	90.0 - 165 ft-lb	V-notch

Thermal Properties	Metric	English	Comments
CTE, linear	17.3 µm/m-°C @Temperature 25.0 - 100 °C	9.60 µin/in-°F @Temperature 77.0 - 212 °F	
	17.73 µm/m-°C @Temperature 25.0 - 250 °C	9.850 µin/in-°F @Temperature 77.0 - 482 °F	
	18.5 µm/m-°C @Temperature 25.0 - 500 °C	10.3 µin/in-°F @Temperature 77.0 - 932 °F	
Specific Heat Capacity	0.5145 J/g-°C @Temperature 52.0 - 102 °C	0.1230 BTU/lb-°F @Temperature 126 - 216 °F	
Thermal Conductivity	12.22 W/m-K @Temperature 23.0 °C	84.81 BTU-in/hr-ft²-°F @Temperature 73.4 °F	
Maximum Service Temperature, Air	982 °C	1800 °F	Scaling Temperature for Continuous Service

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.15 %	<= 0.15 %	
Chromium, Cr	15 - 18 %	15 - 18 %	
Iron, Fe	68 %	68 %	as remainder
Manganese, Mn	4.0 - 6.0 %	4.0 - 6.0 %	
Molybdenum, Mo	0.50 - 2.5 %	0.50 - 2.5 %	
Nickel, Ni	4.0 - 6.0 %	4.0 - 6.0 %	
Nitrogen, N	0.080 - 0.20 %	0.080 - 0.20 %	
Phosphorous, P	<= 0.040 %	<= 0.040 %	
Silicon, Si	3.0 - 4.0 %	3.0 - 4.0 %	
Sulfur, S	<= 0.040 %	<= 0.040 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000716 ohm-cm @Temperature 23.0 °C	0.0000716 ohm-cm @Temperature 73.4 °F	

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