

Carpenter Gall-Tough PLUS™ Stainless, Annealed, 15% Cold Work

Category : Metal , Ferrous Metal , Stainless Steel

Material Notes:

Data provided by Carpenter Technology Corporation. Annealed 1150°C, water quenched, and cold drawn. Threshold Galling Stress 48 MPa.

The avg. total volume loss on the wear test is 10.6 mm³ at 100 rpm. Gall-Tough PLUS™ stainless is a high silicon, high manganese, nitrogen strengthened, austenitic stainless alloy which exhibits superior self-mated galling resistance and metal-to-metal wear resistance. The alloy possesses higher strength than Type 316. It also exhibits chloride corrosion resistance equal to or better than Type 316, along with equivalent high temperature oxidation resistance. Gall-Tough PLUS™ is a trademark of Carpenter Technology Corporation.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Carpenter-Gall-Tough-PLUS-Stainless-Annealed-15-Cold-Work.php

Physical Properties	Metric	English	Comments
Density	7.60 g/cc	0.275 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	889 MPa	129000 psi	
	1185 MPa	171900 psi	
	@Temperature -73.0 °C	@Temperature -99.4 °F	
Tensile Strength, Yield	593 MPa	86000 psi	
	@Strain 0.200 %	@Strain 0.200 %	
	751 MPa	109000 psi	
	@Strain 0.200 %, Temperature -73.0 °C	@Strain 0.200 %, Temperature -99.4 °F	
Elongation at Break	41 %	41 %	in 4D
	49 %	49 %	in 4D
	@Temperature -73.0 °C	@Temperature -99.4 °F	
Reduction of Area	68 %	68 %	
Modulus of Elasticity	184.9 GPa	26820 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	14.19 µm/m-°C	7.883 µin/in-°F	
	@Temperature 25.0 - 50.0 °C	@Temperature 77.0 - 122 °F	
	17.1 µm/m-°C	9.48 µin/in-°F	

Thermal Properties	Metric @Temperature 25.0 - 250 °C	English @Temperature 77.0 - 482 °F	Comments
	18.07 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	10.04 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	
	@Temperature 25.0 - 500 °C	@Temperature 77.0 - 932 °F	
Specific Heat Capacity	0.5055 J/g $\cdot^{\circ}\text{C}$	0.1208 BTU/lb $\cdot^{\circ}\text{F}$	
	@Temperature 50.0 - 100 °C	@Temperature 122 - 212 °F	
Thermal Conductivity	12.0 W/m-K	83.3 BTU-in/hr-ft $^2\cdot^{\circ}\text{F}$	
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	16.5 - 21 %	16.5 - 21 %	
Iron, Fe	62 %	62 %	as remainder
Manganese, Mn	4.0 - 8.0 %	4.0 - 8.0 %	
Molybdenum, Mo	0.50 - 2.5 %	0.50 - 2.5 %	
Nickel, Ni	6.0 - 10 %	6.0 - 10 %	
Nitrogen, N	0.050 - 0.35 %	0.050 - 0.35 %	
Phosphorous, P	<= 0.040 %	<= 0.040 %	
Silicon, Si	2.5 - 4.5 %	2.5 - 4.5 %	
Sulfur, S	<= 0.040 %	<= 0.040 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000947 ohm-cm	0.0000947 ohm-cm	

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