

Carpenter Chrome Core® 12-FM Alloy

Category : Metal , Electronic/Magnetic Alloy , Ferrous Metal

Material Notes:

Data provided by Carpenter Technology Corporation. Chrome Core® alloys are a family of controlled chemistry, ferritic 8 and 12% chromium-iron alloys which are candidates for use in magnetic components where corrosion resistance superior to that of pure iron, low carbon steel and silicon-iron alloys is desired without the substantial decrease in saturation induction associated with the 18% Cr ferritic stainless steels. Applications could include electro-mechanical devices requiring some degree of corrosion resistance, either in service or for extended shelf life without the need for protective coatings. Chrome Core alloys have been considered for use in automotive components such as fuel injectors, fuel pump motor laminations and ABS solenoids. Each chrome level is available in both a standard and a free-machining grade. Chrome Core® is a registered trademark of Carpenter Technology Corporation.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Carpenter-Chrome-Core-12-FM-Alloy.php

Physical Properties	Metric	English	Comments
Density	7.66 g/cc	0.277 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	73	73	
Tensile Strength, Ultimate	421 MPa	61100 psi	
Tensile Strength, Yield	228 MPa @Strain 0.200 %	33100 psi @Strain 0.200 %	
Elongation at Break	50 %	50 %	in 50 mm
Reduction of Area	73 %	73 %	
Modulus of Elasticity	200 GPa	29000 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	10.7 µm/m-°C @Temperature 25.0 - 50.0 °C	5.94 µin/in-°F @Temperature 77.0 - 122 °F	
	11.0 µm/m-°C @Temperature 25.0 - 300 °C	6.11 µin/in-°F @Temperature 77.0 - 572 °F	
	12.0 µm/m-°C @Temperature 25.0 - 600 °C	6.67 µin/in-°F @Temperature 77.0 - 1110 °F	

Specific Heat Capacity Thermal Properties	0.439 J/g-°C Metric	0.105 BTU/lb-°F English	Comments
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Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.030 %	<= 0.030 %	
Chromium, Cr	11.5 - 12.5 %	11.5 - 12.5 %	
Iron, Fe	86 %	86 %	as remainder
Manganese, Mn	0.20 - 0.70 %	0.20 - 0.70 %	
Molybdenum, Mo	0.20 - 0.50 %	0.20 - 0.50 %	
Phosphorous, P	0.030 %	0.030 %	
Silicon, Si	0.30 - 0.70 %	0.30 - 0.70 %	
Sulfur, S	0.20 - 0.40 %	0.20 - 0.40 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000570 ohm-cm	0.0000570 ohm-cm	
Curie Temperature	750 °C	1380 °F	

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