

Carpenter BioDur™ CCM® Medical Implant Alloy, Warm Worked

Category : Metal , Nonferrous Metal , Cobalt Alloy , Superalloy

Material Notes:

Data provided by Carpenter Technology Corporation. Medical Implant Alloy. Non-magnetic Co-Cr-Mo alloy exhibiting high strength, corrosion resistance, and wear resistance. BioDur Carpenter CCM alloy is produced by vacuum induction melting (VIM) followed by electroslag remelting (ESR). BioDur™ and Carpenter CCM® are trademarks of Carpenter Technology Corporation.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Carpenter-BioDur-CCM-Medical-Implant-Alloy-Warm-Worked.php

Physical Properties	Metric	English	Comments
Density	8.287 g/cc	0.2994 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	369	369	Estimated from Rockwell C for Brinell test with 3000 kg load, 10 mm ball.
Hardness, Knoop	403	403	Estimated from Rockwell C
Hardness, Rockwell C	40	40	
Hardness, Vickers	386	386	Estimated from Rockwell C
Tensile Strength, Ultimate	1310 MPa	190000 psi	
Tensile Strength, Yield	930 MPa @Strain 0.200 %	135000 psi @Strain 0.200 %	
Elongation at Break	26 %	26 %	in 4D
Reduction of Area	23 %	23 %	

Thermal Properties	Metric	English	Comments
CTE, linear	13.18 µm/m-°C	7.322 µin/in-°F	
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
	13.47 µm/m-°C	7.483 µin/in-°F	
	@Temperature 25.0 - 300 °C	@Temperature 77.0 - 572 °F	
CTE, linear	15.09 µm/m-°C	8.383 µin/in-°F	
	@Temperature 25.0 - 700 °C	@Temperature 77.0 - 1290 °F	
CTE, linear	17.08 µm/m-°C	9.489 µin/in-°F	

Thermal Properties	Metric	English	Comments
	@ Temperature 25.0 - 1150 °C	@ Temperature 77.0 - 2100 °F	
Specific Heat Capacity	0.470 J/g-°C	0.112 BTU/lb-°F	
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	0.590 J/g-°C	0.141 BTU/lb-°F	
	@Temperature 600 °C	@Temperature 1110 °F	
Thermal Conductivity	0.673 J/g-°C	0.161 BTU/lb-°F	
	@Temperature 1100 °C	@Temperature 2010 °F	
	12.66 W/m-K	87.86 BTU-in/hr-ft ² -°F	
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	25.76 W/m-K	178.8 BTU-in/hr-ft ² -°F	
	@Temperature 600 °C	@Temperature 1110 °F	
	35.57 W/m-K	246.9 BTU-in/hr-ft ² -°F	
	@Temperature 1177 °C	@Temperature 2151 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.10 %	<= 0.10 %	
Chromium, Cr	26 - 30 %	26 - 30 %	
Cobalt, Co	62 %	62 %	as remainder
Iron, Fe	<= 0.75 %	<= 0.75 %	
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Molybdenum, Mo	5.0 - 7.0 %	5.0 - 7.0 %	
Nickel, Ni	<= 1.0 %	<= 1.0 %	
Nitrogen, N	<= 0.25 %	<= 0.25 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	

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