

Carpenter Chrome Core® 18-FM Solenoid Quality Stainless Steel, Annealed

Category : Metal , Electronic/Magnetic Alloy , Ferrous Metal , Stainless Steel

Material Notes:

Data provided by Carpenter Technology Corporation. This is a soft ferritic material designed for operation in more corrosive environments than tolerated by 18% Cr-Fe Type 430 stainless. This new material has corrosion resistance superior to that of Type 430FR Solenoid Quality stainless with generally similar magnetic properties. It is stabilized by niobium (columbium) to provide improved corrosion resistance with optimum machinability. The alloy balance also provides resistivity similar to that of Type 430FR Solenoid Quality stainless. High resistivity is beneficial in applications involving AC excitation due to the suppression of eddy current losses. 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-18-FM-Solenoid-Quality-Stainless-Steel-Annealed.php

| Physical Properties | Metric | English | Comments |
|---------------------|-----------|--------------------------|----------|
| Density | 7.70 g/cc | 0.278 lb/in ³ | |

| Mechanical Properties | Metric | English | Comments |
|----------------------------|----------------------------|------------------------------|----------|
| Hardness, Rockwell B | 86 | 86 | |
| Tensile Strength, Ultimate | 517 MPa | 75000 psi | |
| Tensile Strength, Yield | 345 MPa @Strain 0.200 % | 50000 psi @Strain 0.200 % | |
| Elongation at Break | 35 % | 35 % | In 4D |
| Reduction of Area | 61 % | 61 % | |

| Thermal Properties | Metric | English | Comments |
|------------------------|----------------------------|-----------------------------|----------|
| CTE, linear | 10.4 µm/m-°C | 5.78 µin/in-°F | |
| | @Temperature 23.0 - 204 °C | @Temperature 73.4 - 399 °F | |
| | 11.5 µm/m-°C | 6.39 µin/in-°F | |
| | @Temperature 23.0 - 427 °C | @Temperature 73.4 - 801 °F | |
| | 13.1 µm/m-°C | 7.28 µin/in-°F | |
| | @Temperature 23.0 - 982 °C | @Temperature 73.4 - 1800 °F | |
| Specific Heat Capacity | 0.460 J/g-°C | 0.110 BTU/lb-°F | |

| Component Elements Properties | Metric | English | Comments |
|-------------------------------|---------|---------|--------------|
| Carbon, C | 0.015 % | 0.015 % | |
| Chromium, Cr | 17.5 % | 17.5 % | |
| Iron, Fe | 79 % | 79 % | as remainder |
| Manganese, Mn | 0.40 % | 0.40 % | |
| Molybdenum, Mo | 1.75 % | 1.75 % | |
| Nickel, Ni | 0.20 % | 0.20 % | |
| Niobium, Nb (Columbium, Cb) | 0.25 % | 0.25 % | |
| Phosphorous, P | 0.020 % | 0.020 % | |
| Silicon, Si | 0.90 % | 0.90 % | |
| Sulfur, S | 0.30 % | 0.30 % | |

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