

Crucible Steel 416R Chromium Stainless Steel

Category : Metal , Ferrous Metal , Stainless Steel , T 400 Series Stainless Steel

Material Notes:

Crucible 416R is a pre-hardened chromium stainless steel which is suitable for use in precision match-grade rifle barrels. It can be supplied in various hardness ranges according to the specific requirements (HRC 24/28, 28/32, or 32/36). Crucible 416R was specifically designed by Crucible engineers in collaboration with barrel makers and rifle manufacturers to provide consistency, high quality and the following characteristics: Good machinability for gun drilling and reaming, plus excellent polishability for uniform lapping, necessary for bore accuracy. A homogeneous microstructure which responds to heat treat providing a uniform hardness along the length of the bar, necessary for accurate button rifling to precise groove dimensions. An optimum combination of high tensile strength along with adequate toughness to withstand the typical chamber pressures encountered during firing. Good corrosion resistance to inhibit rusting and which also helps to minimize fouling. Crucible 416R provides a durable finish which does not pit when properly maintained. Precision straightened and stress relieved bars, either mill length or multi length, ready to be cut to length and gun drilled. 100% ultrasonic testing for reliable barrels. Crucible 416R stainless steel is manufactured using very stringent controls from initial melting, through hot rolling, heat treating, cold finishing and final bar inspection. Barrels made from Crucible 416R are used at all levels of competition and in all conditions dry, damp or salty. Although all martensitic stainless steels have reduced ductility at very low temperatures, Crucible 416R can be safely used down to minus 40°F (-40°C). Information provided by Crucible Specialty Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Crucible-Steel-416R-Chromium-Stainless-Steel.php

Physical Properties	Metric	English	Comments
Density	7.75 g/cc	0.280 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	170	170	
Hardness, Rockwell C	28 - 36	28 - 36	
Modulus of Elasticity	200 GPa	29000 ksi	Tension
Shear Modulus	72.3 GPa	10500 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	9.90 $\mu\text{m}/\text{m}\cdot\text{C}$	5.50 $\mu\text{in}/\text{in}\cdot\text{F}$	
	@Temperature -6.00 - 100 °C	@Temperature 21.2 - 212 °F	
	10.1 $\mu\text{m}/\text{m}\cdot\text{C}$	5.61 $\mu\text{in}/\text{in}\cdot\text{F}$	
	@Temperature 0.000 - 315 °C	@Temperature 32.0 - 599 °F	
	11.5 $\mu\text{m}/\text{m}\cdot\text{C}$	6.39 $\mu\text{in}/\text{in}\cdot\text{F}$	

Thermal Properties	Metric @Temperature 0.000 - 538 °C	English @Temperature 32.0 - 1000 °F	Comments
Specific Heat Capacity	0.460 J/g-°C	0.110 BTU/lb-°F	
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
Thermal Conductivity	25.1 W/m-K	174 BTU-in/hr-ft ² -°F	
	@Temperature 93.0 °C	@Temperature 199 °F	
	28.5 W/m-K	198 BTU-in/hr-ft ² -°F	
	@Temperature 538 °C	@Temperature 1000 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.12 %	0.12 %	
Chromium, Cr	12.5 %	12.5 %	
Iron, Fe	86.05 %	86.05 %	As Remainder
Manganese, Mn	0.40 %	0.40 %	
Molybdenum, Mo	0.40 %	0.40 %	
Silicon, Si	0.40 %	0.40 %	
Sulfur, S	0.13 %	0.13 %	

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