

Schmolz + Bickenbach 430FR Stainless Steel Bar

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

Material Notes:

Description: Ugitech™s 430FR is a ferritic stainless steel designed for soft magnetic components operating in corrosive environments. The 17.00% - 18.00% chromium makes corrosion resistance similar to 430F. The increased silicon content in this alloy allows increased magnetic characteristics over 430F in the annealed condition. 430FR has exhibited superior and consistent performance due to its higher electrical resistivity. The alloy was developed for applications that require a weak coercive magnetic force ($H_c = 1.88 \text{ â€" } 3.00 \text{ Oe}$ [$150 \text{ â€" } 240 \text{ A/m}$]) as needed in solenoid valves. Our controlled processing allows magnetic properties to be typically superior to industry norms. 430FR has an increased hardness over 430F, due to the increased silicon levels, reducing the deformation that occurs during the oscillation impacts that occur in AC and DC solenoid valves

Applications: Solenoid Valves and Injectors

Information provided by Schmolz + Bickenbach

Order this product through the following link:

http://www.lookpolymers.com/polymer_Schmolz-Bickenbach-430FR-Stainless-Steel-Bar.php

Physical Properties	Metric	English	Comments
Density	7.61 g/cc	0.275 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	149 - 177	149 - 177	Magnetically Annealed (Grade 1)
Tensile Strength	448 - 552 MPa	65000 - 80000 psi	Magnetically Annealed (Grade 1)
Tensile Strength, Yield	310 - 448 MPa @Strain 0.200 %	45000 - 65000 psi @Strain 0.200 %	Magnetically Annealed (Grade 1)
Elongation at Yield	>= 25 %	>= 25 %	Magnetically Annealed (Grade 1)
Reduction of Area	>= 40 %	>= 40 %	Magnetically Annealed (Grade 1)
Modulus of Elasticity	205 GPa	29700 ksi	Tension

Thermal Properties	Metric	English	Comments
CTE, linear	10.8 $\mu\text{m/m-}\text{^\circ C}$ @Temperature 20.0 - 200 ^\circ C	6.00 $\mu\text{in/in-}\text{^\circ F}$ @Temperature 68.0 - 392 ^\circ F	
Thermal Conductivity	24.9 W/m-K @Temperature 20.0 ^\circ C	173 BTU-in/hr-ft ² - ^\circ F @Temperature 68.0 ^\circ F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.065 %	<= 0.065 %	

Chromium Cr Component Elements Properties	17.25 - 18.25 % Metric	17.25 - 18.25 % English	Comments
Iron, Fe	>= 77.855 %	>= 77.855 %	
Manganese, Mn	<= 0.80 %	<= 0.80 %	
Molybdenum, Mo	<= 0.50 %	<= 0.50 %	
Nickel, Ni	<= 0.60 %	<= 0.60 %	
Phosphorous, P	<= 0.030 %	<= 0.030 %	
Silicon, Si	1.0 - 1.5 %	1.0 - 1.5 %	
Sulfur, S	0.25 - 4.0 %	0.25 - 4.0 %	

Electrical Properties	Metric	English	Comments
Magnetic Permeability	1200 - 2200	1200 - 2200	[Åµ]
	2100	2100	[Åµ]; Typical delivered
Magnetic Coercive Force, Hc	2.3 Oe	2.3 Oe	[Åµ]
	1.88 - 3.0 Oe	1.88 - 3.0 Oe	[Åµ]; Typical delivered
Magnetic Saturation Flux Density, Bmax	16000 Gauss	16000 Gauss	
Magnetic Remanence, Br	3000 - 7500 Gauss	3000 - 7500 Gauss	
	6700 Gauss	6700 Gauss	Typical delivered magnetic properties

Processing Properties	Metric	English	Comments
Annealing Temperature	700.0 - 800.0 Å°C	1292 - 1472 Å°F	For softening
	@Time <=3600 sec	@Time <=1.00 hour	
	900.0 Å°C	1652 Å°F	Optimum magnetic properties; Then cool to 930Å°F at a rate of 120Å°F per hour
	@Time 7200 sec	@Time 2.00 hour	
	838 - 999 Å°C	1540 - 1830 Å°F	Then cool to 930Å°F at a rate of 120Å°F per hour
	@Time 7200 sec	@Time 2.00 hour	
Hot-Working Temperature	750.0 - 1200 Å°C	1382 - 2192 Å°F	Uniformly heating

Descriptive Properties	Value	Comments
Corrosion Resistance	Humidity	2/4
	NaCl 0.2g/l	1.6% mass loss; 60Å°C; 500 hrs

Descriptive Properties	NaCl 0.4g/l Value	1.5% mass loss; 60°C; 500 hrs Comments
	NaCl 0.6g/l	2.25% mass loss; 60°C; 500 hrs
	Sodium Carbonate	2/4

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