

Carlson C 600ESR Nickel-Chromium-Iron Alloy

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

General Description Carlson Alloy C 600 is nickel-chromium alloy, developed for use in severely corrosive environments at elevated temperatures. The high nickel content of this alloy provides excellent resistance to chloride-ion stress corrosion cracking and imparts resistance to corrosion by a number of organic and inorganic compounds. Chromium gives this alloy its resistance to oxidation at temperatures up to 2150°F (1175°C). C 600 combines high strength with desirable workability. It has excellent mechanical properties from sub-zero to elevated temperatures. **Applications** Chemical Processing – calcium and magnesium chloride production; hydrofluoric acid processes; catalyst support equipment in nitric acid production; ammonia converters; tubing, bends and flanges in vinylchloride production; fluorination reactors; fatty acid vessels; and chlorination equipment. Pulp and Paper – liquid heater tubing for pulp digesters; reactors and piping for disposal of organic wastes; sulfate and soda digester linings. Ore Processing – chlorine preheaters for zirconium and titanium production; cans for purification of zirconium salts; titanium dioxide production; reactors for manufacturing aluminum fluoride. Food Processing – vegetable processing equipment. Thermal Processing – equipment for heat treating muffles, retorts, baskets and boxes, furnace fixtures and radiant tubing. Power Generation – nuclear reactors components and steam-turbine crossover bellows. Information provided by Carlson

Order this product through the following link:

http://www.lookpolymers.com/polymer_Carlson-C-600ESR-Nickel-Chromium-Iron-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.42 g/cc	0.304 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength at Break	>= 552 MPa	>= 80000 psi	
Tensile Strength, Yield	>= 241 MPa @Strain 0.200 %	>= 35000 psi @Strain 0.200 %	
Elongation at Break	>= 30 %	>= 30 %	
Modulus of Elasticity	207 GPa	30000 ksi	Tension
Poissons Ratio	0.36	0.36	Calculated
Shear Modulus	75.8 GPa	11000 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	13.3 μm/m-°C	7.40 μin/in-°F	
	@Temperature 21.1 - 93.3 °C	@Temperature 70.0 - 200 °F	
	14.2 μm/m-°C	7.90 μin/in-°F	

Thermal Properties	@Temperature 21.1 - 318 °C Metric	@Temperature 70.0 - 600 °F English	Comments
	15.5 µm/m-°C	8.60 µin/in-°F	
	@Temperature 21.1 - 649 °C	@Temperature 70.0 - 1200 °F	
	16.7 µm/m-°C	9.30 µin/in-°F	
	@Temperature 21.1 - 982 °C	@Temperature 70.0 - 1800 °F	
Specific Heat Capacity	0.444 J/g-°C	0.106 BTU/lb-°F	
Melting Point	1350 - 1413 °C	2470 - 2575 °F	
Solidus	1350 °C	2470 °F	
Liquidus	1413 °C	2575 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.15 %	<= 0.15 %	
Chromium, Cr	14 - 17 %	14 - 17 %	
Copper, Cu	<= 0.50 %	<= 0.50 %	
Iron, Fe	6.0 - 10 %	6.0 - 10 %	
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Nickel, Ni	>= 72 %	>= 72 %	
Silicon, Si	<= 0.50 %	<= 0.50 %	
Sulfur, S	<= 0.015 %	<= 0.015 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000103 ohm-cm	0.000103 ohm-cm	
Magnetic Permeability	1.01	1.01	200 Oersted
Curie Temperature	-124.4 °C	-191.9 °F	

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