

Carlson 70 30 Cu Ni Copper-Nickel Alloy

Category : Metal , Nonferrous Metal , Copper Alloy , Nickel Alloy

Material Notes:

General Description Carlson alloy 70 30 Cu Ni is a copper nickel alloy with excellent resistance to corrosion and erosion. It is strong and ductile. 70 30 Cu Ni is utilized in areas where high temperatures and pressures, combined with high velocities and turbulence are serious problems. It can be utilized up to 700°F for ASME code heat exchangers and unfired pressure vessels. 70 30 Cu Ni exhibits outstanding resistance to general and impingent attack by clean sea water. It is, however, subject to bio-fouling at low velocities. 70 30 Cu Ni also has excellent resistance to attack by fresh water, boiler feedwater, and steam. It withstands the attack of phosphoric, sulfuric, and mild organic acids. It is attacked by chromic, hydrobromic, hydrochloric, and nitric acids. 70 30 Cu Ni is resistant to alkaline chlorides, chromates, nitrates and sulfates. It is, however, attacked by the cyanides and acid dichromates. 70 30 Cu Ni resists wet and dry chlorine, bromine, and carbon dioxide at ambient temperatures. **Applications** 70 30 Cu Ni is widely used in marine service, tidewater power plants, desalination plants, oil refineries, and in the chemical process industry. It is utilized extensively as a condenser and salt water tube and piping material for the U.S. Navy. **Product applications** include condenser, heat exchanger and distiller tubes, tube sheets and baffles, sale water piping, water boxes, tanks, vats, pressure vessels, process equipment, pumps and valves. **Information provided by Carlson**

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http://www.lookpolymers.com/polymer_Carlson-70-30-Cu-Ni-Copper-Nickel-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.94 g/cc	0.323 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength at Break	310 MPa	45000 psi	
	@Thickness >=63.5 mm	@Thickness >=2.50 in	
Tensile Strength, Yield	>= 345 MPa	>= 50000 psi	
	@Thickness <=63.5 mm	@Thickness <=2.50 in	
Tensile Strength, Yield	124 MPa	18000 psi	
	@Strain 0.200 %, Thickness >=63.5 mm	@Strain 0.200 %, Thickness >=2.50 in	
Elongation at Break	>= 138 MPa	>= 20000 psi	
	@Strain 0.200 %, Thickness <=63.5 mm	@Strain 0.200 %, Thickness <=2.50 in	
Elongation at Break	>= 35 %	>= 35 %	
Modulus of Elasticity	152 GPa	22000 ksi	

Thermal Properties	Metric	English	Comments
	16.2 μm/m-°C	9.00 μin/in-°F	

CTE linear Thermal Properties	Metric @ Temperature 20.0 - 300 °C	English @ Temperature 68.0 - 572 °F	Comments
Specific Heat Capacity	0.377 J/g-°C	0.0900 BTU/lb-°F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.050 %	<= 0.050 %	
Copper, Cu	64.39 - 70.6 %	64.39 - 70.6 %	
Iron, Fe	0.40 - 1.0 %	0.40 - 1.0 %	
Lead, Pb	<= 0.020 %	<= 0.020 %	
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Nickel, Ni	29 - 33 %	29 - 33 %	
Phosphorous, P	<= 0.020 %	<= 0.020 %	
Sulfur, S	<= 0.020 %	<= 0.020 %	
Zinc, Zn	<= 0.50 %	<= 0.50 %	

Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com

Email : sales@lookpolymers.com

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215,Fengxian District, Shanghai City,China