

Carlson 90 10 Cu Ni Copper-Nickel Alloy

Category : Metal , Nonferrous Metal , Copper Alloy

Material Notes:

General Description Carlson Alloy 90 10 Cu Ni is a copper-based alloy developed as a cost-effective substitute for 70 30 Cu Ni. An addition of approximately 1.4% iron was made to increase its resistance to general corrosion, erosion and impingement corrosion resulting from the turbulent flow of water containing air bubbles and silt flowing at a high velocity. 90 10 Cu Ni has good strength at moderately elevated temperatures. It can be fabricated by both hot and cold-working procedures, and is readily weldable. 90 10 Cu Ni has excellent resistance to corrosion by fresh water, brackish water, and sea water. It is not recommended for usage in heavily polluted water containing sewage and industrial wastes. 90 10 Cu Ni resists attack by phosphoric, sulfuric, and mild organic acids. It is attacked by chromic, hydrochloric and nitric acids. 90 10 Cu Ni is also resistant to the alkali chlorides, nitrates, sulfates and to ammonia and ammonium compounds. **Applications** 90 10 Cu Ni is widely used in marine service, offshore platform sea water piping, tidewater power plants, desalination plants, oil refineries, and in the chemical process industry. Product applications include condenser tubes and plates, distiller tubes, tube sheets and baffles for condensers and heat exchangers, evaporator and heat exchanger tubes, salt water piping, water boxes, ship hulls and hot water tanks. Information provided by Carlson

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http://www.lookpolymers.com/polymer_Carlson-90-10-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	>= 276 MPa	>= 40000 psi	
Tensile Strength, Yield	>= 103 MPa @Strain 0.200 %	>= 15000 psi @Strain 0.200 %	
Elongation at Break	>= 30 %	>= 30 %	
Modulus of Elasticity	124 GPa	18000 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	17.1 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature 20.0 - 300 $^\circ\text{C}$	9.50 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 68.0 - 572 $^\circ\text{F}$	
Specific Heat Capacity	0.377 J/g- $^\circ\text{C}$ @Temperature 20.0 $^\circ\text{C}$	0.0900 BTU/lb- $^\circ\text{F}$ @Temperature 68.0 $^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.050 %	<= 0.050 %	

Component Elements Properties	Metric 90 %	English 90 %	Comments
Iron, Fe	1.0 - 1.8 %	1.0 - 1.8 %	
Lead, Pb	<= 0.020 %	<= 0.020 %	
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Nickel, Ni	9.0 - 11 %	9.0 - 11 %	
Phosphorous, P	<= 0.020 %	<= 0.020 %	
Sulfur, S	<= 0.020 %	<= 0.020 %	
Zinc, Zn	<= 0.50 %	<= 0.50 %	

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