



Material Data Sheet 958

Copper-Aluminum-Iron-Nickel (Aluminum Bronze)

Chemical Composition
(% max, unless shown as range or min.)

	Cu*	Pb	Fe	Ni	Al	Mn	Mg	Si	Zn	Sn
Min/Max	79.0min.	.03	3.5-4.5**	4.0-5.0**	8.5-9.5	.8-1.5	-	.10	-	-
Nominal	81.0	-	4.0	4.5	9.0	1.0	-	-	-	-

*Cu + Sum of Named Elements, 99.5% min.

**Fe content shall not exceed Ni content.

Applicable Specifications

Process or Ingot	Specification
Sand	ASTM B148, B 763
	MILITARY MIL-B-24480
	SAE J461, J462

Fabrication Practices

Joining Technique	Suitability
Soldering	Good
Brazing	Fair
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Good
Coated Metal Arc Welding	Good

Physical Properties

	US Customary	Metric
Melting Point - Liquidus	1940 F	1060 C
Melting Point - Solidus	1910 F	1043 C
Density	0.276 lb/in ³ at 68 F	7.64 gm/cm ³ @ 20 C
Specific Gravity	7.64	7.64
Electrical Resistivity	146.7 ohms-cmil/ft @ 68 F	24.39 microhm-cm @ 20 C
Electrical Conductivity	7 %IACS @ 68 F	0.041 MegaSiemens/cm @ 20 C
Thermal Conductivity	20.8 Btu · ft/(hr · ft ² · °F) at 68F	36.0 W/m · °K at 20 C
Coefficient of Thermal Expansion	9.0 · 10 ⁻⁶ per °F (68-572 F)	16.2 · 10 ⁻⁶ per °C (20-300 C)
Specific Heat Capacity	0.105 Btu/lb/°F at 68 F	440.0 J/kg · °K at 293 K
Modulus of Elasticity in Tension	16500 ksi	114000 MPa
Magnetic Permeability*	1.05	1.05
Poisson's Ratio	0.32	0.32

Heat Treatment

Stress Relieving:
600° F (315C) for 1h/in. of Section Thickness

Cannot be strengthened by heat treatment

Machinability Rating: 20

Typical Uses:

Propeller Hub
Blades and other parts in contact
with salt water

Mechanical Properties

		US Customary	Metric	Applicable Specification
Tensile Strength	Minimum	85 ksi	585 MPa	ASTM B 148, B 763, SAE J462-A
	Typical	95 ksi	655 MPa	
Yield Strength (0.5% Ext. under load)	Minimum	35 ksi	240 MPa	ASTM B 148, B 763, SAE J462-A
	Typical	38 ksi	262 MPa	
Elongation	Minimum	15 %, in 2 in.	15 %, in 51 mm	ASTM B 148, B 763, SAE J462-A
	Typical	25 %, in 2 in.	25 %, in 51 mm	
Brinell Hardness (3,000 kg load)				
	Typical	159	159	

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