



Material Data Sheet 955

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	78.0min.	-	3.0-5.0	3.0-5.5	10.0-11.5	3.5	-	-	-	-
Nominal	80.0	-	4.0	4.3	11.0	-	-	-	-	-

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

Applicable Specifications

Process or Ingot	Specification
Sand	ASTM B148, B 763 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	1930 F	1054 C
Melting Point - Solidus	1900 F	1038 C
Density	0.272 lb/in ³ at 68 F	7.53 gm/cm ³ @ 20 C
Specific Gravity	7.53	7.53
Electrical Resistivity	122.8 ohms-cmil/ft @ 68 F	20.41 microhm-cm @ 20 C
Electrical Conductivity	8 %IACS @ 68 F	0.049 MegaSiemens/cm @ 20 C
Thermal Conductivity	24.2 Btu · ft/(hr · ft ² · °F) at 68F	41.9 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	0.1 Btu/lb/°F at 68 F	419.0 J/kg · °K at 293 K
Modulus of Elasticity in Tension	16000 ksi	110000 MPa
Magnetic Permeability	1.32	1.32
Poisson's Ratio	0.32	0.32

Heat Treatment

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

Solution Anneal:
1600°-1675° F 1h/WQ

Tempering:
1150°-1225° F (620-665C) for 1h/AC

This alloy may be sensitive to water-quench cracking in heavy casting sections. Oil quenching or forced-air cooling may be preferred.

Machinability Rating: 50
(C36000, Free Cutting Brass = 100)

Typical Uses:

Corrosion and Oxidation Resistant Applications
Valve Guides and Seats in Aircraft Engines

Bushings
Landing Gear Parts
Agitators
Gears
Pickling Hooks and Baskets
Worms
Gun Recoil Mechanisms

Mechanical Properties

		US Customary	Metric	Applicable Specification
Tensile Strength	Minimum	90 ksi	620 MPa	ASTM B 148, B 763, SAE J462-A
	Typical	100 ksi	689 MPa	
Yield Strength (0.5% Ext. under load)	Minimum	40 ksi	275 MPa	ASTM B 148, B 763, SAE J462-A
	Typical	44 ksi	303 MPa	
Elongation	Minimum	6 %, in 2 in.	6 %, in 51 mm	ASTM B 148, B 763, SAE J462-A
	Typical	12 %, in 2 in.	12 %, in 51 mm	
Brinell Hardness (3,000 kg load)	Minimum	190	190	ASTM B 148, B 763
	Typical	195	195	

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