C95500

Product Description:	Nickel-Aluminum Bronze
Solids:	½" to 9" O.D.
Tubes:	1 ⅛" to 9" O.D.
Rectangles:	Up to 15"
Standard Lengths:	144"
Shape/Form:	semi-finished, mill stock or near-net shapes, anode, bar stock, billet/bloom, squares, hex, plate, profile or structural shape, flats/rectangular bar
Compliance:	C95500 is compliant with key legislation including (1) Federal Safe Drinking Water Act 1974 – SDWA, (2) Federal Reduction of Lead in Drinking Water Act of 2011 and (3) California AB1953

Typical Uses

Builders Hardware	window hardware
Consumer	musical instruments, piano keys
Electrical	electrical hardware
Fasteners	stuffing box nuts
Industrial	aircraft components, bearings, bushings, gears, glands, glass molds, handgun recoil mechanisms, hot mill guides, landing gear parts, machine parts, pickling equipment, piston guides, pump fluid ends, sewage treatment applications, valve bodies, valve components, valve guides, valve seats, wear plates, welding jaws, worm wheels, worms
Marine	covers for marine hardware, marine applications, marine hardware, ship building
Ordnance	government fittings

Note: Also available in heat-treated condition.

Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C95500	B505 B505M	J461 J462		QQ-C-390, G3	MIL-B-16033, Class 4	Aluminum Bronze 9D

Chemical Composition

Cu%	Fe%	Ni%[1]	Al%	Mn%
78.00 min	3.00-5.00	3.00-5.50	10.00-11.50	3.50

Chemical Composition according to ASTM B505/B505M-18

[1]Ni value includes Co.
Note: Cu + Sum of Named Elements, 99.5% min. Unless otherwise noted, single values represent maximums.

RANDALL

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Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/in^3 at 68 ˚F)
C95500	50	0.272

Mechanical Properties

Tensile Strength, min		Yield Strength, at 0.5% Extension Under Load, min		Elongation, in 2 in. or 50 mm min	Brinell Hardness (3000 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
95	655	42	290	10	208	

Mechanical Properties according to ASTM B505/B505M-18

Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1930 ˚F	1054 ˚C
Melting Point – Solidus	1900 ˚F	1038 ˚C
Density	0.272 lb/in3 at 68 ˚F	7.53 gm/cm3 at 20 ˚C
Specific Gravity	7.53	7.53
Electrical Conductivity	8% IACS at 68 ˚F	0.049 MegaSiemens/cm at 20 ˚C
Thermal Conductivity	24.2 Btu/sq ft/ft hr/˚F at 68 ˚F	41.9 W/m at 20 ˚C
Coefficient of Thermal Expansion 68-572	9 · 10-6 per ˚F (68-572 ˚F)	15.5 · 10-6 per ˚C (20-300 ˚C)
Specific Heat Capacity	0.1 Btu/lb/˚F at 68 ˚F	419 J/kg at 20 ˚C
Modulas of Elasticity in Tension	16000 ksi	110000 MPa
Magnetic Permeability*	1.32	1.32
Magnetic Permeability**	1.2	1.2
Poisson's Ratio	0.32	0.32

Physical Properties provided by CDA

*As cast, field strength 16 kA/m **TQ 50 temper, field strength 16 kA/m

Fabrication Properties

Technique	Suitability
Soldering	Good
Brazing	Fair
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Good
Coated Metal Arc Welding	Good
Machinability Rating	50

Fabrication Properties provided by CDA

Thermal Properties

Treatment	Min*	Max*	Value*	Time**	Medium
Stress Relief			600		
Solution Treatment	1600	1675		1	Water
Annealing	1150	1225		1	

Thermal Properties provided by CDA

*Temperature is measured in Fahrenheit. **For Stress Relief, Solution Treatment and Annealing - Time is measured in hours/inch of thickness. For Precipitation Heat Treatment - Time is measured in hours.