

C84400

Cast

Product Description:	Leaded Semi-Red Brass
Solids:	½" to 13" O.D.
Tubes:	1" to 16" O.D.
Rectangles:	Up to 20"
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

Typical Uses

Architecture	ornamental fixtures
Builders Hardware	cases for dead bolt locks, dead bolt locks, door hardware for prisons, hardware
Building	cooling equipment, heating equipment
Consumer	musical instruments
Electrical	electrical equipment
Industrial	low-pressure fittings, pump fixtures, valve bodies for the water industry, valve seat, valves, valves for water meters
Marine	boat parts, marine hardware, nuts for transducers
Plumbing	fixtures, pipe fittings

Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C84400	B505 B505M B271 B271M B584			WW-U-516		Valve Metal

Chemical Composition

Cu% ¹	Pb%	Sn%	Zn%	Fe%	P%	Ni% ^{1,2}	Al%	S%	Sb%	Si%
78.00- 82.00	6.00- 8.00	2.30- 3.50	7.00- 10.00	0.40	1.50	1.00	0.005	0.08	0.25	0.005

Chemical Composition according to ASTM B505/B505M-18

¹In determining Cu min., Cu may be calculated as Cu + Ni.
Note: Single values represent maximums.

²Ni value includes Co.

Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/in ³ at 68 °F)
C84400	90	0.314

Mechanical Properties

Tensile Strength, min		Yield Strength, at 0.5% Extension Under Load, min		Elongation, in 2 in. or 50 mm min	Brinell Hardness (500 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
30	207	15	103	16	55	

Mechanical Properties according to ASTM B505/B505M-18

Physical Properties

	US Customary	Metric
Melting Point - Liquidus	1840 °F	1004 °C
Melting Point - Solidus	1549 °F	843 °C
Density	0.314 lb/in ³ at 68 °F	8.69 gm/cm ³ at 20 °C
Specific Gravity	8.69	8.69
Electrical Conductivity	16.4% IACS at 68 °F	0.095 MegaSiemens/cm at 20 °C
Thermal Conductivity	41.8 Btu/sq ft/hr/°F at 68 °F	72.4 W/m at 20 °C
Coefficient of Thermal Expansion 68-572	10 · 10 ⁻⁶ per °F (68-572 °F)	17.3 · 10 ⁻⁶ per °C (20-300 °C)
Specific Heat Capacity	0.09 Btu/lb/°F at 68 °F	3771 J/kg at 20 °C
Modulus of Elasticity in Tension	13000 ksi	89600 MPa
Magnetic Permeability	1	1

Physical Properties provided by CDA

Fabrication Properties

Technique	Suitability
Soldering	Excellent
Brazing*	Good
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Not Recommended
Coated Metal Arc Welding	Fair
Machinability Rating	90

Fabrication Properties provided by CDA

*Since brazing is performed within the hot-short range, strain must be avoided during brazing and cooling.

Thermal Properties

Treatment	Value*	Time**
Stress Relief	500	
Solution Treatment		0

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.