

C83800

Continuous cast

Product description	Leaded red brass
Solids	1/2" 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

Builders hardware

Hardware

Electrical

Electrical components, switches

Industrial

Air/gas/water fittings, bushings, pump fixtures, railroad catenary fittings, valves

Plumbing

Plumbing fixtures

Similar or equivalent specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C83800	B505 B505M B271 B271M B584	J461 J462		WW-U-516		Hydraulic bronze

Chemical composition

Cu (%) ¹	Pb (%)	Sn (%)	Zn (%)	Fe (%)	P (%)	Ni (%) ^{1,2}	Al (%)	S (%)	Sb (%)	Si (%)
82.00-83.80	5.00-7.00	3.30-4.20	5.00-8.00	0.30	1.50	1.00	0.005	0.08	0.25	0.005

Chemical composition according to ASTM B505/B505M-23

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)
C83800	90	0.312

C83800 continued

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	97	16	60	

Mechanical properties according to ASTM B505/B505M-23

Physical properties

	US customary	Metric
Melting point – liquidus	1840 °F	1004 °C
Melting point – solidus	1550 °F	843 °C
Density	0.312 lb/in ³ at 68 °F	8.64 gm/cm ³ at 20 °C
Specific gravity	8.64	8.64
Electrical conductivity	15% IACS at 68 °F	0.087 MegaSiemens/cm at 20 °C
Thermal conductivity	41.8 Btu/sq ft/ft hr/°F at 68 °F	72.4 W/m at 20 °C
Coefficient of thermal expansion 68-392	10 · 10 ⁻⁶ per °F (68-392 °F)	17.3 · 10 ⁻⁶ per °C (20-200 °C)
Specific heat capacity	0.09 Btu/lb/°F at 68 °F	377.1 J/kg at 20 °C
Modulus of elasticity in tension	13300 ksi	91700 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

Casting characteristics

Casting attribute	Level
Casting yield	High
Drossing	Low
Effect of section size	High
Fluidity	Medium
Gassing	Medium
Patternmakers shrinkage (inches per foot)	3/16
Shrinkage in solidification	Medium

Casting characteristics provided by CDA