C53400

Continuous cast and drawn	
Product description	Phosphor bronze B-1
Tempers	H04 hard
Solids	3/8" to 2 1/2" O.D.
Hex	3/8" to 2" O.D.
Standard lengths	144"

Typical uses

Industrial

Bearings, bushings, fasteners

Similiar or equivalent specification						
CDA	ASTM	SAE	AMS	Federal	Military	Other
C53400	B139 B139M					

Chemical composition					
Cu (%)	Pb (%)	Sn (%)	Zn (%)	Fe (%)	P (%)
Remain	0.80-1.20	3.50-5.80	0.30	0.10	0.03-0.35

Chemical composition according to ASTM B139/B139M-12(2017)

Note: Cu + sum of named elements, 99.5% min. Single values represent maximums.

Machinability

Copper alloy UNS no.	Machinability rating	Density (lb/in^3 at 68 $^\circ$F)
C53400	70	0.320

Mechanical properties

Mechanical properties according to ASTM B139/B139M-12(2017)
C53400
H04 hard

Size range 1/16" to 1/4" round and hexagonal inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or specimen thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
65	450			8	86	

Size range 1/4" to 1/2" round and hexagonal inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or specimen thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
60	415			10	86	

Size range over 1/2" to 1" round and hexagonal inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or specimen thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
55	380			12	86	

Size range over 1" round and hexagonal

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or specimen thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
50	345			15	86	

Physical properties

	US customary	Metric
Melting point – liquidus	1920˚F	1049˚C
Melting point – solidus	1750˚F	954˚C
Density	0.32 lb/in³ at 68˚F	8.91 gm/cm³ at 20˚C
Specific gravity	8.91	8.91
Electrical conductivity	15% IACS at 68˚F	0.08 MegaSiemens/cm at 20˚C
Thermal conductivity	40 Btu/sq ft/ft hr/˚F at 68˚F	69.28 W/m at 20˚C
Coefficient of thermal expansion 68-572	9.9 · 10^{-6} per˚F (68-572˚F)	17.1 · 10^{-6} per˚C (20-300˚C)
Modulas of elasticity in tension	16000 ksi	110310 MPa
Modulas of rigidity	6000 ksi	41300 MPa

Physical properties provided by CDA

Fabrication properties

Technique	Suitability
Soldering	Excellent
Brazing	Good
Oxyacetylene welding	Poor
Gas shielded arc welding	Fair
Coated metal arc welding	Poor
Spot weld	Fair
Seam weld	Fair
Butt weld	Good
Capacity for being cold worked	Good
Capacity for being hot formed	Poor
Machinability rating	70

Fabrication properties provided by CDA

Thermal properties

Treatment	Minimum*	Maximum*
Annealing	900	1250

Thermal properties provided by CDA

**Temperature is measured in Fahrenheit.*

Common fabrication processes

Bending, blanking, forming, knurling, machining, roll threading, shearing, stamping, upsetting

Common fabrication processes provided by CDA