

C91600

Continuous Cast

Product Description:	High Tin Bronze
Solids:	1" to 6" O.D.
Tubes:	1" to 6" O.D.
Rectangles:	Up to 10"
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

Fasteners	nuts
Industrial	bearings, bushings, fittings, gears, piston rings, pump impellers, steam castings

Similar or Equivalent Specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C91600	B427			QQ-C-390, F1		

Chemical Composition

Cu% ¹	Pb%	Sn%	Zn%	Fe%	P%	Ni% ²	Al%	S%	Sb%	Si%
86.00- 89.00	0.25	9.70- 10.80	0.25	0.20	0.30	1.20- 2.00	0.005	0.05	0.20	0.005

Chemical Composition according to ASTM B427-21

¹In determining Cu min., Cu may be calculated as Cu + Ni. ²Ni value includes Co.
Note: Cu + Sum of Named Elements, 99.4% min. Single values represent maximums.

Machinability

Copper Alloy UNS No.	Machinability Rating	Density (lb/in ³ at 68 ° F)
C91600	20	0.32

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	%	minimum BHN	
45	310	25	172	10	85	

Mechanical Properties according to ASTM B427-21

Physical Properties

	US Customary	Metric
Melting Point – Liquidus	1887 °F	1031 °C
Melting Point – Solidus	1575 °F	857 °C
Density	0.32 lb/in ³ at 68 °F	8.86 gm/cm ³ at 20 °C
Specific Gravity	8.86	8.86
Electrical Conductivity	10% IACS at 68 °F	0.058 MegaSiemens/cm at 20 °C
Thermal Conductivity	40.8 Btu/sq ft/ft hr/°F at 68 °F	70.6 W/m at 20 °C
Coefficient of Thermal Expansion 68-392	9 · 10 ⁻⁶ per °F (68-392 °F)	15.5 · 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	16000 ksi	110000 MPa

Physical Properties provided by CDA

Fabrication Properties

Technique	Suitability
Soldering	Excellent
Brazing*	Good
Oxyacetylene Welding	Fair
Gas Shielded Arc Welding	Fair
Coated Metal Arc Welding	Fair
Machinability Rating	20

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.