C91700

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

Industrial

Gears, heavy load/relatively low-speed bearings, worm gears, worm wheels

Similiar or equivalent specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C91700	B427					Nickel gear bronze

Chemical composition

Cu (%)[1]	Pb (%)	Sn (%)	Zn (%)	Fe (%)	P (%)	Ni (%)[2]	Al (%)	S (%)	Sb (%)	Si (%)
84.00-87.00	0.25	11.30-12.50	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

[1]In determining Cu min., Cu may be calculated as Cu + Ni. [2]Ni 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 $^\circ$F)
C91700	20	0.316

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	
35	241	17	117	10	65	

Mechanical properties according to ASTM B427-21

Physical properties

	US customary	Metric
Melting point – liquidus	1859 °F	1015 °C
Melting point – solidus	1563 °F	851 °C
Density	0.316 lb/in³ at 68 °F	8.75 gm/cm³ at 20 °C
Specific gravity	8.75	8.75
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	$9 \cdot 10^{-6}$ per °F (68-392 °F)	$15.5 \cdot 10^{-6}$ per °C (20-200 °C)
Specific heat capacity	0.09 Btu/lb/ °F at 68 °F	377.1 J/kg at 20 °C
Modulas of elasticity in tension	15000 ksi	103400 MPa
Magnetic Permeability	1	1

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.*