AMS 4590-C63020

Standard-stocked product	Extruded and drawn

Product description	Nickel-aluminum bronze
Tempers	TQ50 quenched and tempered
Solids	3/4" to 4" O.D.
Hex	Consult mill
Standard lengths	24"

Typical uses

Aerospace

Bearings, bushings

Industrial

Bearings, forming dies for roll bearings, hydraulic bushings for earth-moving equipment, valve balls, valve parts (cryogenic)

Similiar or equivalent specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C63020	B150 B150M		4590			

Chemical composition

Cu (%)	Pb (%)	Sn (%)	Zn (%)	Fe (%)	Ni (%)[1]	Al (%)	Co (%)	Cr (%)	Mn (%)	Si (%)
Remain	0.03	0.25	0.30	4.00-5.50	4.20-6.00	10.00-11.00	0.20	0.05	1.50	0.15

Chemical composition according to AMS 4590

[1]Ni value includes Co.
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°F)	Density (gm/cu3 at 20°C)
C63020		0.275	7.6

Mechanical properties

Mechanical properties according to AMS 4590
C63020
TQ50 quenched and tempered

Size range up to 1" diameter inclusive

Tensile strength, min		Yield strength, at 0.2% offset, min		Elongation, in 2 in. (50.8 mm) or 4D, min	Rockwell "C" hardness	Remarks
ksi	MPa	ksi	MPa	%	min HRC	
135	931	100	689	6	26	

Size range over 1" to 2" diameter inclusive

Tensile strength, min		Yield strength, at 0.2% offset, min		Elongation, in 2 in. (50.8 mm) or 4D, min	Rockwell "C" hardness	Remarks
ksi	MPa	ksi	MPa	%	min HRC	
130	896	95	655	6	26	

Size range over 2" to 4" diameter inclusive

Tensile strength, min		Yield strength, at 0.2% offset, min		Elongation, in 2 in. (50.8 mm) or 4D, min	Rockwell "C" hardness	Remarks
ksi	MPa	ksi	MPa	%	min HRC	
130	896	90	621	6	26	

Physical properties

	US customary	Metric
Melting point – liquidus	1940 to 1967 °F	1060 to 1075 °C
Density	0.274 lb/in³ at 68 °F	7.6 gm/cm³ at 20 °C
Specific gravity	7.6	7.6
Electrical Resistivity	132.33 ohms-cmil/ft at 68 °F	22.0 microhm-cm at 20 °C
Thermal conductivity	31.2 Btu/sq ft/ft hr/ °F at 68 °F	54.0 W/m at 20 °C
Coefficient of thermal expansion 68-572	9.4 · 10^{-6} per °F (68-572 °F)	17.0 · 10^{-6} per °C (20-300 °C)

Physical properties provided by CDA