

# AMS 4590-C63020 Lead-Free Replacement

**Wrought**

<b>Product Description:</b>	Nickel Aluminum Bronze
<b>Tempers:</b>	TQ50 Quenched and Tempered
<b>Solids:</b>	¾" to 4" OD
<b>Hex:</b>	Consult Mill
<b>Rectangles:</b>	Consult Mill
<b>Standard Lengths:</b>	24"

## Typical Uses

<b>Aerospace</b>	bushings, bearings
<b>Industrial</b>	bearings, forming dies for roll bearings, hydraulic bushings for earth moving equipment, valve balls, valve parts-cryogenic, wear plates, dies

## Similar or Equivalent Specification

CDA	ASTM	ASARCON	SAE	AMS	FEDERAL	MILITARY	OTHER
C63020	B150 B150M			4590			

## Chemical Composition

Cu%	Pb%	Sn%	Zn%	Fe%	Ni% <sup>1</sup>	Al%	Co%	Cr%	Mn%	Si%
Rem.	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

<sup>1</sup>Ni value includes Co.

Note: Cu + Sum of Named Elements, 99.5% min. Single values represent maximums.

## Mechanical Properties

AMS 4590-C63020 continued

Mechanical Properties according to AMS 4590  
C63020  
TQ50 Quenched and Tempered

### SIZE RANGE: UP TO 1" DIAMETER INCLUSIVE

Tensile Strength, min		Yield Strength, at .2% Offset, min		Elongation, in 2 Inches (50.8 mm) or 4D	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 .2% Offset, min		Elongation, in 2 Inches (50.8 mm) or 4D	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 .2% Offset, min		Elongation, in 2 Inches (50.8 mm) or 4D	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/in <sup>3</sup> at 68° F	7.60 gm/cm <sup>3</sup> at 20° C
Specific Gravity	7.60	7.60
Electrical Resistivity	132.33 ohms-cmil/ft at 68° F	22.0 microhm-cm at 20° C
Thermal Conductivity	31.2 Btu · ft/(hr · ft <sup>2</sup> · °F) at 68° F	54.0 W/m at 20° C
Coefficient of Thermal Expansion	9.4 · 10 <sup>-6</sup> per °F (68°-572° F)	17.0 · 10 <sup>-6</sup> per °C (20°-300° C)

