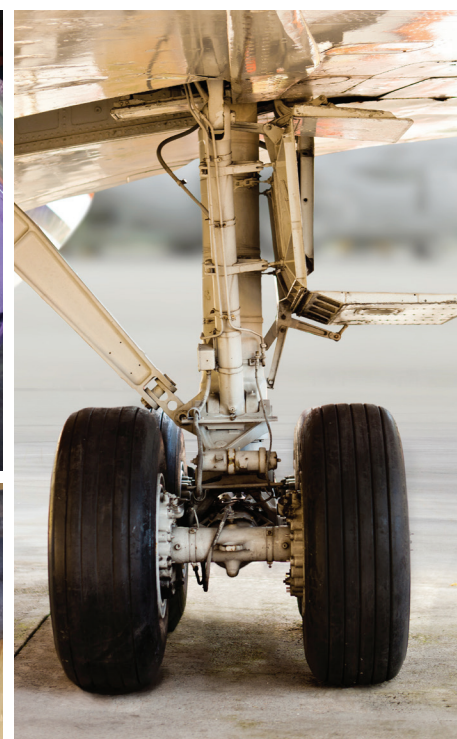


AMS 4590 (C63020) NICKEL ALUMINUM BRONZE

OFFERED IN SOLID BARS



AMS 4590 (C63020), Nickel Aluminum Bronze is a martensitic, heat-treated copper alloy, and the strongest in the Nickel Aluminum Bronze family. In some cases this alloy can be a substitute for Beryllium Copper, or other high nickel alloys, due to its exceptional properties. It is excellent in sea water, good corrosion and erosion resistance, high strength and low friction properties. Its very high mechanical properties and hardness, with good ductility and toughness, make it ideal for applications involving very heavy loads, extreme abrasive wear, corrosion service, friction, deformation, and high temperatures.

TYPICAL USES

Aerospace

Landing Gear Parts, Strut Bushings

Oil & Gas

Rock Bit Bearings, Bushings, & Washers, BOP Parts, Wellhead Components

Automotive

Bearings, Off-Highway Truck Bushings, Forming Roll Bearings

Marine & Valve

Pump Parts, Bushings, Ball Valves

Industrial

Cams, Shafting, Hydraulic Bushings for Earth Moving Equipment, Valve Balls, Cryogenics, Drill Guide Bushings

Military

Tank Track Bearings, Bushings, Aircraft Components

SIZES AVAILABLE

Solid Bar..... 3/4" – 8" diameter

SIMILAR OR EQUIVALENT SPECS

AMS 4590 B

ASTM B-150-12

CuAl11Ni5Fe5

NFL 14706



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AMS 4590 (C63020) NICKEL ALUMINUM BRONZE

Chemical Composition, Mechanical Properties, Physical Properties

CHEMICAL COMPOSITION

	Cu ^(1,2)	Pb	Sn	Zn	Fe	Ni ⁽³⁾	Al	Co	Cr	Mn
Min (%)	74.5	-	-	-	4.0	4.2	10.0	-	-	-
Max (%)	-	0.03	0.25	0.30	5.5	6.0	11.0	0.20	0.05	1.5

MECHANICAL PROPERTIES

Form	Diameter Size	Tensile Strength, min		Yield Strength, at .5% Extension Under Load min		Elongation In 2 in. or 50 mm min	Rockwell 'C' Hardness
Rod		KSI	MPa	KSI	MPa	%	
	Up to 1" Up to 25.4 mm	135	931	100	689	6	26
	1" - 2", 25.4 mm - 50.8 mm	130	896	95	655	6	26
	2" - 4" 50.8 mm - 101.6 mm	130	896	90	621	6	26
	over 4"	130	896	90	621	4	26

TEMPERS:

HR50: extruded / cold drawn / heat treated (3/4" - 3" diameter inclusive)

TQ50: hot forged / heat treated (3 1/8" - 8" diameter inclusive)

PHYSICAL PROPERTIES - USA

Melting Point - Liquidus °F.....	1940-1967
Density lb/cu in @ 68 °F.....	0.269
Specific Gravity.....	7.60
Electrical Resistivity ohms-cmil/ft @ 68 °F.....	132.33
Electrical Conductivity % IACS @ 68 °F.....	6
Thermal Conductivity Btu/sq ft/ft hr/°F @ 68 °F.....	31.2
Coefficient of Thermal Expansion 10 ⁻⁶ per °F (68-212 °F).....	9.4
Specific Heat Capacity Btu/lb/°F @ 68 °F.....	0.108
Modulus of Elasticity in Tension ksi.....	18000
Magnetic Permeability.....	1.27

PHYSICAL PROPERTIES - METRIC

Melting Point - Liquidus °C.....	1060-1075
Density gm/cu cm @ 20 °C.....	7.60
Specific Gravity.....	7.60
Electrical Resistivity microhm-cm @ 20 °C.....	22.0
Electrical Conductivity MegaSiemens/cm @ 20 °C.....	0.075
Thermal Conductivity W/m. °K @ 20 °K.....	54
Coefficient of Thermal Expansion 10 ⁻⁶ per °C (20-300 °C).....	17
Specific Heat Capacity J/kg. °K @ 20 °C.....	0.450
Modulus of Elasticity in Tension GPa.....	124
Magnetic Permeability.....	1.27

AVIVA Color Code



MAUVE

Aviva Metals now produce and hold substantial inventories of AMS 4881 Nickel Aluminum Bronze. AMS 4881 is made in tube form and typically meets the full mechanicals of AMS 4590/C63020.

There are substantial cost savings available by utilizing AMS 4881.

The values listed on this document represent reasonable approximations suitable for general engineering use. Due to commercial variations in composition and to manufacturing limitations, they should not be used for specification purposes. See applicable A.S.T.M. Specification references.

www.avivametals.com

www.avivametals.eu

USA / Canadian Sales

+1 (713) 869-9600

sales@avivametals.com



European Sales

+33 494 109 386

info@avivametals.com



Other Territories

trading@avivametals.com