NWB®

High Performance Bearing Technology

C63020 NICKEL ALUMINUM BRONZE (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. 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.

Alternative Specifications

AMS 4590B
ASTM B-150

Physical Properties

Density . . . . . .269 lb/Cu. in
Electrical Conductivity . . . . . 6 % est. IACS
Thermal Conductivity . . . . . 0.11 est CGS

Typical Uses

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

Aerospace
Landing Gear Parts, Strut Bushings

Automotive
Bearings, Off-Highway Truck Bushings, Forming Roll Bearings

Marine
Pump Parts, Bushings

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

Military
Tank Track Bearings, Bushings, Aircraft Components

Room Temp Tensile & Hardness Data

FORM	SECTION SIZE (INCHES)	TENSILE (KSI) MIN	YIELD (KSI) MIN	ELONGATION IN HD MIN	ROCKWELL
ROD (TQ50)	up to 1.0 inclusive	135	100	6	26 RC
	1-2 inclusive	130	95	6	26 RC
	2-4 inclusive	130	90	6	26 RC
	over 4	130	90	4	26 RC

Tempers:
HR50: extruded / cold drawn / heat treated (3/4" - 3" diameter inclusive)
TQ50: hot forged / heat treated (3 1/8" - 8" diameter inclusive)

Chemical Composition

	Cu[1]	Al	Cr	Co	Fe	Pb	Mn	Ni[2]	Sn	Zn
min/max	74.5 Min	10.0-11.0	.05	.20	4.0-5.5	.03	1.5	4.2-6.0	.25	.30
nominal	-	10.5	-	-	4.7	-	-	5.1	-	-

(1) Cu value includes Ag.
(2) Ni value includes Co.
NOTE: Cu +(sum of named elements) = 99.5% min.

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