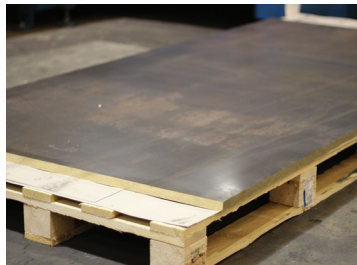


C63000 (AMS 4640) NICKEL ALUMINUM BRONZE

Offered in solid bars and plates.



C63000 (AMS 4640) Nickel Aluminum Bronze contains 5% nickel and is heat treatable. Available in both rod and forged form, it is intended for applications that require combinations of corrosion resistance, excellent bearing properties at considerable loads, and extremely high strength both at room and elevated temperatures.

Typical Uses

Aerospace

Landing Gear Bushings & Bearings, Flap Bushings, Actuator Parts, Strut Bushings

Oil & Gas

Valve Stems, Pump Shafts, Seal Glands, BOP Parts

Automotive

Valve Guides, Valve Seats, Timing Gears

Marine

Pump Parts, Bolts, Ship Propellers, Propeller Nuts, Shafts

Other Industrial

Balls, Gears, Cams, Shafting, Condenser Tube for Power Stations and Desalting Units, Valve Seats, Valve Guides, Pump Shafts, Structural Members, Tanks, Heat Exchanger Headers, Heat Exchanger Flanges, Bearings, Bushings, Valve Balls, Hydraulic Bushings for Earth Moving Equipment, Corrosion Resistant Articles, Aircraft Parts, Welded Piping Systems, Plunger Tips, Pump Parts, Plunger Tips

Sizes Available from NBM

Solid Bar.....3/8" - 15" diameter
Hex & Square Bar.....made to order
Plate.....cut to size, up to 6" thick

Similar or Equivalent Specifications

ASTM B-150-12	ASTM B-283	QQ-C-465 B
ASTM B-124	AMS 4640 H	ASME SB150
ASTM B-171	SAE J463	

Continuous
AMS 4880

 **NBM Metals**
www.nbmmetals.com

The Leading USA Manufacturer & Master Distributor
of Brass, Bronze, & Copper Alloys

C63000 (AMS 4640) NICKEL ALUMINUM BRONZE

Chemical Composition, Tensile & Hardness, Physical Properties

Corrosion Resistance

C63000 has good resistance to sulphuric, hydrochloric and other non-oxidizing acids, as well as salt water and brackish waters. Its superior erosion and cavitation properties facilitate use in pump and propeller applications. Retention of properties together with good oxidation resistance at elevated temperatures make C63000 suitable for service in internal combustion engines, steam plant applications and chemical processing applications. Very little deterioration takes place below 600° F and oxidation is retarded up to 1200° F by an oxide film. C63000 is very resistant to stress corrosion cracking in numerous applications. Galling is a common problem designers have to overcome when choosing materials. Affinity between two mating metallic surfaces can easily introduce galling when exposed to large bearing pressures and extreme temperatures. C63000 has great galling resistance, making it the material of choice for such applications.

Workability: Not suitable to be cold worked. C63000 can be easily hot worked in the temperature range of 1450°-1700° F.

Chemical Composition

	Cu ^(1,2)	Sn	Zn	Fe	Ni ⁽³⁾	Al	Mn	Si
Min (%)				2.0	4.0	9.0		
Max (%)	Rem	0.20	0.30	4.0	5.5	11.0	1.5	0.25

(1) Cu + Sum of Named Elements, 99.5% min. (2) Cu value includes Ag. (3) Ni value includes Co.

Room Temp Tensile & Hardness Data

FORM	TEMPER	SECTION SIZE (INCHES)	TENSILE (KSI) MIN	YIELD (KSI) MIN	ELONGATION IN HD MIN	BRINELL (3000 KG)
Rod	Hot or Cold	up to 1.0	110	68	10	201 - 248
		to 2.0	110	60	10	201 - 248
	Finished and heat treated	to 3.0	105	55	10	187 - 241
		3.0 to 12.0	100	50	10	187 - 241
		12.0 Plus	80	40	17	148 - 178
Forging	Heat treated	-	85	42.5	10	201 - 248

Physical Properties

Melting Point - Liquidus °F.....	1930
Melting Point - Solidus °F.....	1895
Density lb/cu in @ 68 °F.....	0.274
Specific Gravity.....	7.58
Electrical Conductivity % IACS @ 68 °F.....	7
Thermal Conductivity Btu/ sq ft/ ft hr/ °F at 68 °F.....	22.6
Coefficient of Thermal Expansion 10 ⁻⁶ per °F (68-212 °F).....	9
Specific Heat Capacity Btu/lb/ °F @ 68 °F.....	0.09
Modulus of Elasticity in Tension ksi.....	17500
Modulus of Rigidity ksi.....	6400
Machinability Rating.....	30%

NBM Metals now produce and hold substantial inventories of NBM AMS 4880 Nickel Aluminum Bronze. NBM AMS 4880 is made in tube form and typically meets the full mechanicals of AMS 4640/C63000.

There are substantial cost savings available by utilizing NBM AMS 4880.

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.