

Nickel Aluminium Bronze Alloy

C63000 nickel aluminium bronze combines high strength and wear resistance under severe loading conditions. The addition of nickel increases the alloy strength without diminishing its ductility, toughness and corrosion resistance.

National Specifications

Material may also be released to Customer Specifications, subject to enquiry.

ASTM	UNS	SAE AMS	British Standard	Other
-	C63000	AMS 4640	-	FED-QQ-C-465

Technical Data

Chemical Composition

	Cu	Al	Ni	Fe
Min %	-	9.0	4.0	2.0
Max %	Bal	11.0	5.5	4.0

Typical Tensile Properties at Ambient Temperature

Annealed Size	Yield Strength MPa min.	UTS MPa min.	Elongation % min.
Up to 25.4mm	469	758	10
Over 25.4mm to 50.8mm	414	758	10
Over 50.8mm to 76.2mm	379	724	10
Over 76.2mm to 127.0mm	345	689	10

Physical Properties

Density	7580 kg/m ³
Electrical conductivity	7% IACS
Electrical resistivity	0.193μΩm
Thermal Conductivity at 20°C	39.1 W/(mk)
Thermal Expansion 20 – 300°C	16.2 X 10 ⁻⁶ / °K

Hot Working

Nickel Aluminium Bronze is hot worked by conventional techniques in the temperature range 815 - 900°C.

Heat Treatment

Annealed at 593°C - 704°C for a time dependent on section thickness followed by air cooling.

Machining

Machining is best performed using a carbide tool with water soluble lubricant, a light feed, a moderately heavy depth of cut and the highest possible cutting speed consistent with best tool life. Typical parameters are tabulated below.

Condition	Tool Type	Cut Depth mm	Speed m/min.	Feed mm/rev.
Annealed	Carbide	3.0 – 6.0 roughing	30 – 60	0.25
		0.12 – 0.25 finishing	120 – 180	0.12

The data presented herein are not intended for specification purposes, and should be considered as typical or average values only. Applications suggested for the materials described herein are made solely to allow the reader to make his own evaluation, and are not to be construed as warranties, either limited or express, or fitness for these or other applications. Materials must be tested under actual service conditions to determine their suitability for a particular purpose.