

**Alloys**

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**Product Data Sheet****AMS 4640 C63000**

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 Specification**

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

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

**Technical Data**

Chemical Composition.

	Cu	Al	Ni	Fe
<b>Min %</b>	-	9.0	4.0	2.0
<b>Max %</b>	Bal	11.0	5.5	4.0

Typical Tensile Properties at Ambient Temperature.

Annealed Size	0.2% PS MPa min.	UTS MPa min.	Elongation % min.
<b>Up to 25.4mm</b>	469	758	10
<b>Over 25.4mm to 50.8mm</b>	414	758	10
<b>Over 50.8mm to 76.2mm</b>	379	724	10
<b>Over 76.2mm to 127.0mm</b>	345	689	10

Physical Properties.

<b>Density</b>	7580 kg/m <sup>3</sup>
<b>Electrical Conductivity</b>	7% IACS
<b>Electrical Resistivity</b>	0.193μΩm
<b>Thermal Conductivity at 20°C</b>	39.1 W/(mk)
<b>Thermal Expansion 20 - 300°C</b>	16.2 X 10 <sup>-6</sup> / °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	Speed m/min.	Feed mm/rev.
<b>Annealed</b>	<b>Carbide</b>	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.*