

MSRR 8503 Nickel Aluminium Bronze Alloy

A complex nickel- aluminium bronze with good mechanical strength and hardness which are maintained at elevated temperatures. For non-classified parts only – machining bars, forging stock and forgings general bars and forgings

National Specifications

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

ASTM	UNS	SAE AMS	British Standard	Other
-	-	-	-	-

Technical Data

Chemical Composition

	Cu	Al	Ni	Fe
Min %	-	8.0	4.0	4.0
Max %	Bal	11.0	6.0	6.0

Typical Tensile Properties at Ambient Temperature

Annealed Size	0.2% PS MPa min.	UTS MPa min.	Elongation % min.
Bars/Finished Parts ≤ 100mm	410	695	15
Bars/Finished Parts > 100mm	325	650	15
Forging Stock ≤ 100mm	410	695	15
Forging Stock > 100mm	325	650	15
Forgings/Finished Parts ≤ 100mm	410	695	15
Forgings/Finished Parts > 100mm	325	650	15

Physical Properties

Density	7500 kg/m ³
Electrical conductivity	8% IACS
Electrical resistivity	0.172μΩm
Thermal Conductivity at 20°C	42 W/(mk)
Thermal Expansion 20 – 300°C	17.6 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 450°C or 700°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.