

Cast Nickel-Aluminum Bronze C95500 — Material Data Sheet

ASTM B505 continuous-cast bar · UNS C95500 · Nickel-aluminum bronze 9D (Alloy 955, 11 % Al – 4 % Ni – 4 % Fe)
Continuous-cast 81 Cu – 11 Al – 4 Ni – 4 Fe nickel-aluminum bronze, heat treatable

The strongest common cast bronze — 95 ksi as cast, 110 ksi heat treated — for propeller hubs, seawater valve bodies, gears and the heaviest wear applications.

TENSILE, AS CAST	95 ksi min	ELONGATION, AS CAST / HT	10 / 8 % min
TENSILE, HEAT TREATED	110 ksi min	ALUMINUM / NICKEL / IRON	11 / 4 / 4 % nominal
YIELD, AS CAST / HT	42 / 62 ksi min	MAGNETIC	Slightly (iron content)

Nominal composition



Midpoints of the specification ranges, for orientation only. Limits are in the table.

Chemical composition — C95500 nickel-aluminum bronze (ASTM B505 Table 10)

Element	Symbol	Min %	Max %
Copper	Cu	78.0	—
Aluminium	Al	10.0	11.5
Nickel (incl. cobalt)	Ni	3.0	5.5
Iron	Fe	3.0	5.0
Manganese	Mn	—	3.5

Values per ASTM B505/B505M-23 Table 10, Chemical Requirements (verified against the specification); B505 Table 11 requires the named elements to total 99.0 % (C93200) or 99.5 % (C95400, C95500) minimum. Confirm the edition called out on your purchase order with our estimating team.

Physical properties (typical)

DENSITY	0.272 lb/in ³
MAGNETIC	Slightly, from the iron content
SPARKING	Non-sparking

Heat treatment

May be supplied heat treated (quenched and temper annealed) to obtain the C95500HT properties, per B505 Table 2.

Mechanical properties — C95500 continuous-cast bar per ASTM B505 Table 9

Condition	Tensile strength, min (ksi)	Yield strength at 0.5 % extension, min (ksi)	Elongation, min (%)
As cast	95	42	10
Heat treated (C95500HT)	110	62	8

Values per ASTM B505/B505M-23 Tables 1 and 9 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Applicable standards

ASTM B505 / B505M	Copper alloy continuous castings
ASTM B148	Aluminum bronze sand castings (C95500)
ASTM B150 (C63000)	Wrought nickel-aluminum bronze equivalent
MIL-B-24480	Nickel-aluminum bronze castings for naval use

Forms we supply in C95500 Ni-Al Bronze

- Bushings, gears and wear rings
- Valve seats, discs and stems
- Pump impellers and wear plates machined from bar
- Non-sparking tooling
- Certified B505 solid and cored bar

Typical applications

- Marine propeller hubs, shafts and rudder bearings
- Seawater pump and valve components
- Heavy-duty gears, worm wheels and bushings
- Desalination and offshore equipment
- Naval hardware to MIL-B-24480