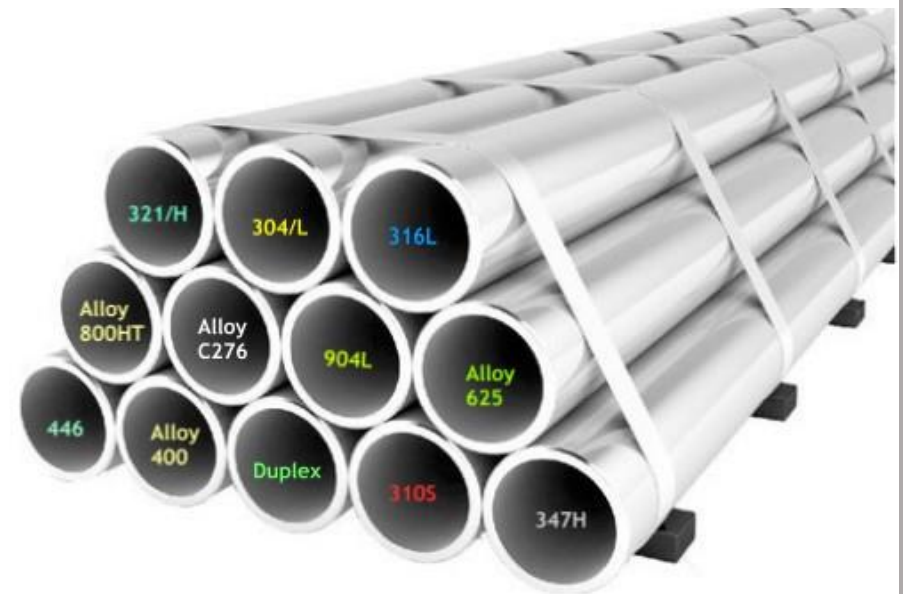


# NICKEL ALUMINIUM BRONZE

## Datasheet for Nickel Aluminium Bronze

- Pipes & Tubes
- Sheets & Plates
- Bars & Rods, Forgings
- Fittings & Flanges
- Nuts & Bolts
- Valves



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# Datasheet for Nickel Aluminium Bronze

## CuAl11Ni5Fe5, Alloys CW304G, CW307G and CW308G, C95500 (9A) Alloys

### What is Nickel Aluminium Bronze?

- Nickel aluminium bronzes can be classified as alloys containing 6-13% aluminium and up to 7% iron and 7% nickel. Alloys CW304G, CW307G and CW308G are nickel aluminium bronzes. Similar to other grades of aluminum bronze, C95500 contains nickel. Nickel makes C95500 aluminum bronze one of the toughest non-ferrous alloys known. C95500 is also known as 9A Alloys.
- **Aluminium bronze** is a type of bronze in which aluminium is the main alloying metal added to copper, in contrast to standard bronze (copper and tin) or brass (copper and zinc). There are two major groups in the Aluminum Bronze family. Aluminum Bronze contains approximately 9-14% aluminum and 4% iron while Nickel Aluminum Bronze contains approximately 9-11% aluminum, 4% iron and 5% nickel. That addition of iron and nickel in the latter further improves the corrosion resistance of a material that is already strong in this area. Increasing the aluminum content of bronze results in higher strength. These nickel aluminum bronze alloys are used for bushings, bearings, wear plates, and hydraulic valve components. Nickel aluminum bronze is available in rod, tube, and plate forms.

### Nickel Aluminium Bronze Product Specification

MATERIAL:	Nickel Aluminium Bronze
GRADE:	C95500
STANDARD:	ASTM B505, B505M
SOLIDS:	1/2" to 9" O.D.
TUBES:	1 1/8" to 9" O.D.
RECTANGLES:	Up to 15"
STANDARD LENGTHS:	144"

SHAPE/FORM:	semi-finished, mill stock or near-net shapes, anode, bar stock, billet/bloom, squares, hex, plate, profile or structural shape, flats/rectangular bar
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### Specification of Nickel Aluminium Bronze

End Product	Specification
Bar	ASTM B150
Pipe	ASTM B315
Rod	ASTM B150
Shapes	AMS 4590, ASTM B150
Tube	ASTM B315

### Size Range of Nickel Aluminium Bronze

ROUND RODS	8mm To 70 mm
HEX	10mm To 60mm
SQUARE	10mm To 60mm
FLAT	10mm Min Thickness and max Width 120mm
BILLETS	Up to 200 mm
INGOTS	As per Specification

### Chemical Properties of C95500 Nickel Aluminium Bronze

Cu%	Sn%	Pb%	Zn%	Fe%	Ni%	Sb%	P%	S%	Al%	Mn%	Si%
78 min	N/A	N/A	N/A	3.00-5	3.00-5.5	N/A	N/A	N/A	10.00-11.5	3.5	N/A

### Mechanical Properties of C95500 Nickel Aluminium Bronze

Tensile Strength, min	95 ksi	655 MPa
Yield Strength @ .5% ext under load min	42 ksi	290 MPa
Elongation in 2 in. or 50 mm min, %	10	
Brinell Hardness	208	
Machinability Rating	50%	

### Physical Properties of C95500 Nickel Aluminium Bronze

	US Customary	Metric
Melting Point-Liquidus	1930 °F	1054 °C
Melting Point-Solidus	1900 °F	1038 °C
Density	0.272 lb/in <sup>3</sup>	7.53 gm/cm <sup>3</sup>
	@ 68 °F	@ 20 °C
Specific Gravity	7.53	7.53

Electrical Resistivity	N/A	N/A
Electrical Conductivity	8% IACS	0.049 MegaSiemens/cm
	@ 68 °F	@ 20 C
Thermal Conductivity	24.2 Btu/sq ft/ft hr/°F	41.9 W/m
	@ 68 °F	@ 20 °C
Coefficient of	$9 \cdot 10^{-6}$ per °F	$15.5 \cdot 10^{-6}$ per °C
Thermal Expansion	(68-212 °F)	(20-100 °C)
Specific Heat Capacity	0.1 Btu/lb/°F	419 J/kg
	@ 68 °F	@293 °C
Modulus of Elasticity in Tension	16000 ksi	110000 MPa
Magnetic Permeability*	1.32	1.32
*Field Strength 16 kA/m		

### Properties of Nickel Aluminium Bronze

- Excellent wear and galling resistance
- High strength
- Density (10% lighter than steel)
- Non-sparking
- Low magnetic permeability (of <math>1.03 \mu</math> in selected grades)
- High corrosion resistance
- Good stress corrosion properties
- Good cryogenic properties

- High resistance to cavitation
- Damping capacity twice that of steel
- High resistance to biofouling
- A protective oxide surface film which has the ability to self-repair.

### Applications of Nickel Aluminium Bronze

- 1) Aerospace
- 2) Architecture
- 3) Marine - defense
- 4) Marine - commercial
- 5) Offshore oil/gas and petrochemical
- 6) Desalination and water condenser systems.

### Types of Nickel Aluminium Bronze Products

Nickel Aluminium Bronze Hollow Pipe	Nickel Aluminium Bronze Heater for High Temperature
Nickel Aluminium Bronze Seamless Pipe	Nickel Aluminium Bronze Heat Exchanger Tube
Nickel Aluminium Bronze Bush Hex Pipe	Potassium-doped Nickel Aluminium Bronze Wire
Nickel Aluminium Bronze Round Pipe	Nickel Aluminium Bronze Welded Pipe
Nickel Aluminium Bronze Alloy Round Pipe	Nickel Aluminium Bronze Rotating target
Nickel Aluminium Bronze Aero engine tube	Nickel Aluminium Bronze Custom Pipe
Nickel Aluminium Bronze Alloy Custom Pipe	Nickel Aluminium Bronze Thick Wall Pipe
Nickel Aluminium Bronze Elliptical and Oval Tube	Nickel Aluminium Bronze Thin Wall Pipe
Nickel Aluminium Bronze Pipe Fittings	Nickel Aluminium Bronze Forging
Nickel Aluminium Bronze Strips	Nickel Aluminium Bronze Fasteners

Nickel Aluminium Bronze Flex pipe	Nickel Aluminium Bronze Plates, Sheets and Bars
Nickel Aluminium Bronze Alloy Polished Pipe	UNS Nickel Aluminium Bronze lined pipe
Nickel Aluminium Bronze Exhaust Pipe	Nickel Aluminium Bronze Micro Tube
Nickel Aluminium Bronze Bar/Billet	Nickel Aluminium Bronze Wire/Welding Wire
Nickel Aluminium Bronze Boiler Tube	Nickel Aluminium Bronze Coil Tubing
Nickel Aluminium Bronze Capillary Tube	Nickel Aluminium Bronze U Shaped Tube
Nickel Aluminium Bronze Rods	Precision Nickel Aluminium Bronze Tubing
Nickel Aluminium Bronze Suppliers	Nickel Aluminium Bronze Pipe Manufacturers
Nickel Aluminium Bronze Ingots	Nickel Aluminium Bronze Foil
Nickel Aluminium Bronze Metals	Nickel Aluminium Bronze Crucibles

### Related Products:

Copper Nickel Aluminum Bronze, CuAl11Ni5Fe5, Aluminium Bronze, Copper Nickel Aluminum, Aluminum Bronze, Alum Bronze, C61400, C62400, C62500, C63200, C63000, C63020, AMS4640, NFL 14-705, AMS4590, NFL 14-706, C64700, C93200, C95400, C95500, B124, B150, B169, B170, B171, B411, MIL-B-24059, MIL-B-16166, QQ-C-465, QQ-C-465, 2.0978, DIN 17665, UA11N, NFL14706, Aircraft Bronze, BS 2872/4 CA104M, BS B 23, BS 2B 23, EN 12163/5/7 CW307G AIR 9070 UA11N, 9A Alloy

### Manufacturing Nickel Aluminium Bronze Products

<a href="#">Nickel Aluminium Bronze Sheet</a>	<a href="#">Nickel Aluminium Bronze Plate Cuttings/Profiles</a>	<a href="#">Nickel Aluminium Bronze Nuts, Bolts, Fasteners</a>
<a href="#">Nickel Aluminium Bronze Plate</a>	<a href="#">Nickel Aluminium Bronze Foil, Coil</a>	<a href="#">Nickel Aluminium Bronze Wire</a>
<a href="#">Nickel Aluminium Bronze Blocks/Slabs</a>	<a href="#">Nickel Aluminium Bronze Strip</a>	<a href="#">Nickel Aluminium Bronze Ingot</a>
<a href="#">Nickel Aluminium Bronze Rod/Bar</a>	<a href="#">Nickel Aluminium Bronze Pipes and Tubes</a>	<a href="#">Nickel Aluminium Bronze Forgings, Castings</a>

[Nickel Aluminium Bronze Flanges](#)

[Nickel Aluminium Bronze Forged Fittings](#)

[Nickel Aluminium Bronze Butt Weld Fittings](#)

## About Metallica Metals – The Steel Pipes Factory

- Established in 1975, the Metallica Metals Group (The Steel Pipes Factory) has its operations spread across major cities in India. We are a pioneer in the stainless steel pipes, nickel alloy products, titanium products, carbon steel pipes and alloy steel pipes manufacturing and processing industry. Our products including pipe fittings, flanges, pipes, sheet plates and valves are exported to over 70 countries across the world, while in India we have supplied to even the remote areas. With over 250 tons of sale in stainless steel and carbon steel pipes every day, Metallica has emerged as a prominent vendor for many buyers in India and Overseas
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## Our Key Products

### **STAINLESS STEEL & NICKEL ALLOYS**

[Pure Nickel Alloys](#)  
[Monel Alloys \(Ni-Cu Alloys\)](#)  
[Inconel \(Ni-Cr-Mo\) Alloys](#)  
[Incoloy Alloys \(Ni-Cr-Fe\)](#)  
[Hastelloy Alloys](#)  
[Stainless Steel 304/304L](#)  
[Stainless Steel 309S/309H](#)  
[Stainless Steel 310/310S](#)  
[Stainless Steel 316/316L](#)  
[Stainless Steel 316Ti](#)  
[Stainless Steel 317/317L](#)  
[Stainless Steel 321/321H](#)  
[Stainless Steel 347/347H](#)  
[Stainless Steel 904L](#)  
[Duplex Steels \(UNS S32205, UNS S31803\)](#)  
[Super Duplex Steels \(UNS S32760 / UNS S32750\)](#)

### **INSTRUMENTATION TUBES & FITTINGS**

[Instrumentation Tube](#)  
[Hydraulic Tubing](#)  
[Seamless Tubing](#)  
[Instrumentation Tube Fittings](#)  
[Double Compression Tube Fittings](#)  
[Precision Pipe Fittings](#)  
[Needle & Gauge Valves](#)  
[Manifold Valves](#)

### **PRODUCTS**

[Steel Sheet & Plate](#)  
[Steel Coil & Strip](#)  
[Steel Pipes](#)  
[Steel Tubes](#)  
[Electropolish Tube](#)  
[Heat Exchanger Tubes](#)  
[Steel Bars/Rods & Wire](#)  
[Fasteners \(Nut, Bolt, Washer\)](#)  
[Steel Angle Bars](#)  
[Hex Steel Bars](#)  
[Round Steel Bars & Rod](#)  
[Flat Steel Bars](#)  
[Forgings, Rings & Forged Blocks](#)  
[Stainless Steel Pipe](#)  
[Stainless Steel Seamless Pipe](#)  
[Stainless Steel Welded Pipe](#)



Stainless Steel 254 SMO (UNS S31254 / 1.4547)

Stainless Steel Tubes  
Stainless Steel Furnace Tubes  
Stainless Steel Seamless Tubing  
Stainless Steel Heat Exchanger Tubes  
Large Diameter Pipe

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