



Aluminum Bronze A4

Description

Aluminum Bronze A4 is a nickel-aluminum bronze alloy used to weld cast and wrought nickel-aluminum bronze. It has excellent resistance to corrosion, erosion, and cavitations in salt or brackish water. Aluminum Bronze A4 applications include, ship fittings, ship propellers, power plant valves, piping systems, intake screens, oil recovery pumps, and propeller gear housings.

Bare (ERCuNiAl)

Specifications

AWS A5.7 / ASME SFA 5.7 Class ERCuNiAl

Typical Chemical Composition

Copper * Balance
 Aluminum 8.5 – 11.0
 Iron 3.0 – 5.0
 Nickel 4.0 – 6.0
 Manganese 0.60 – 3.50
 Silicon .10 max.
 Others 0.50 max.
 *includes Silver

Typical Mechanical Properties

Tensile Strength, ksi 104 (718 MPa)
 Yield Strength, ksi 59 (407 MPa)
 Elongation, in 2 in. 23%
 Reduction of area 22%
 BHN (3000 kg) ¼" deposit 196

Coated (ECuNiAl)

Specifications

AWS A5.6 / ASME SFA 5.6 Class ECuNiAl

Typical Chemical Composition

Copper * Balance
 Aluminum 8.5 – 9.5
 Iron 3.0 – 5.0
 Nickel 4.0 – 6.0
 Manganese 0.50 - 3.50
 Silicon 1.50 max.
 Others 0.50 max.
 *includes Silver

Typical Mechanical Properties

Tensile Strength, ksi 99 (683 MPa)
 Yield Strength, ksi 58 (400 MPa)
 Elongation, in 2 in. 25%
 Reduction of area 22%
 BHN (3000 kg) ¼" deposit 187

Recommended Welding Parameters

Shielded Metal-arc (dcep)-Positive	Electrode Diameter	Amperes*	Gas Tungsten-arc	Filler Diameter	Amperes* (dcen)	Amperes* (achf)
	3/32"	50-110		1/16"	70-120	70-150
	1/8"	90-160		3/32"	120-160	140-230
	5/32"	130-180		1/8"	170-230	225-320
	3/16"	150-225		5/32"	220-280	175-300
Gas Metal-arc (dcep)-Positive	Wire Diameter	Voltage	Amperes*			
	.035"	20-26	100-200			
	.045"	22-28	100-250			
	1/16"	29-32	250-400			
	3/32"	32-34	350-500			

*Use low side of range for iron- or nickel-base alloys; middle of range for bronze alloys; high side for copper.

Gas Selection

GTAW 100% Helium 40-45 cfh **GMAW** 100% Argon 45-55 cfh
 100% Argon 40-45 cfh 75/25 Ar/He 45-55 cfh

Notice: The results reported are based upon testing of the product under controlled laboratory conditions in accordance with American Welding Society Standards. Actual use of the product may produce different results due to varying conditions. An example of such conditions would be electrode size, plate chemistry, environment, weldment design, fabrication methods, welding procedure and service requirements. Thus the results are not guarantees for use in the field. The manufacturer disclaims any warranty of merchantability or fitness for any particular purpose with respect to its products.

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