

Aluminum Bronze A-2

◆ INTRODUCTION

Aufhauser Aluminum Bronze A-2 is an iron-bearing MIG and TIG filler metal that is excellent for building-up or overlaying metal for wear and corrosion resistant surfaces. Weld deposits exhibit high mechanical properties, tensile strength, yield strength and hardness. Aluminum Bronze A-2 is widely used as a filler metal to join dissimilar combinations, such as copper/bronze to steel.

◆ APPLICATIONS

- Joining aluminum bronze of similar composition: silicon and manganese bronze, high strength copper-zinc alloys, some copper-nickel alloys, ferrous metals and dissimilar metals.
- Marine maintenance and repair welding of ship propellers, pump housings, rigging jacks, piston heads, bearings and many overlay or surfacing applications.

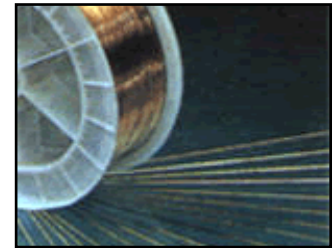
◆ CHEMICAL COMPOSITION

Copper	Aluminum	Iron	Lead	Silicon	Zinc
Remainder	8.5-11.0	0.50-1.50	0.02*	0.10*	0.02*

*max (Other) Note: Copper contains Silver. Copper + Named elements = 99.5% min.

◆ PHYSICAL and MECHANICAL PROPERTIES

Melting Point - Liquidus:	1913°F (1045°C)
Melting Point - Solidus:	1904°F (1040°C)
Density, at 68°F:	0.272 lb/in ³
Electrical Conductivity, at 68°F:	13 %IACS
Thermal Conductivity, at 68°F:	37.0 Btu · ft/(hr · ft ² · °F)
Electrical Resistivity, at 68°F:	79.8 ohms-cmil/ft
Specific Gravity:	7.53
Specific Heat Capacity, at 68°F:	0.09 Btu/lb/°F
Tensile Strength:	79,000 psi
Yield Strength:	35,000 psi
Elongation, in 2 in.:	28%
Brinell Hardness:	130-150
<i>Hardness will vary depending on weld quality and welder expertise</i>	



◆ SPECIFICATIONS MEET or EXCEED

- AWS A5.7 Class ERCuAl-A2
- ASME SFA5.7 ERCuAl-A2
- QQ-R-571C
- MIL-R-19631B Type MIL-R-CuAl-A2
- MIL-W-6712
- MIL-E-23765/3 (MIL-CuAl-A2)
- UNS C61800

◆ STANDARD SIZES AND DIAMETERS

Size	Cast (12" spool)	Helix (12" spool)
3/32 or 1/8 x 36" rod	N/A	N/A
0.035" dia. x 30 lb. Spl	15-40"	< 1"
0.045" dia. x 30 lb. Spl	15-40"	< 1"
0.062" dia. x 30 lb. Spl	15-40"	< 1"

Copper and its alloys require a relatively high heat input with shortened welding time. Higher preheat temperatures and faster welding rates than for steel are necessary.



Aufhauser
Corporation
39 West Mall
Plainview, NY 11803
Telephone:
516-694-8696
800-645-9486
Fax: 212-246-0158
sales@brazing.com

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◆ RECOMMENDED WELDING PARAMETERS:

* **GMAW (MIG) Parameters** (DC Reverse Polarity) Electrode Positive Spray transfer

Wire Diameter	Amps	Volts	Argon (cfh)	Wire Feed (ipm)
0.030	80-140	25-26	25	340-450
0.035	130-200	26-27	30	280-400
0.045	185-245	27-28	30	200-300
1/16	250-400	28-30	40	150-210

***GTAW (TIG) Parameters** (DCSP) ² Electrode negative or ACHF

Material	2% Thoriated ²	Filler Wire Size	Amps (DC)	Amps (AC)	Gas Cup	Argon (cfh)
1/16"	1/16"	1/16"	80-120	80-120	3/8-1/2	15
3/32"- 1/8"	3/32"	3/32"	145-205	145-195	7/16-1/2	15
3/16"	1/8"	3/32"-1/8"	300-350	255-300	7/16-1/2	20
1/2"	3/16"	1/8"	515-640	340-485	1/2	25

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