

Phosphor Bronze C

◆ INTRODUCTION

Aufhauser Phosphor Bronze C filler metal is used quite extensively for surfacing applications. The higher tin content, at 7.0-9.0%, gives Phos-Bronze C weld deposits greater hardness and higher tensile/yield strength than C518 (Phos-Bronze A). When gas tungsten arc welding with Phos-Bronze C, preheating is recommended.

◆ APPLICATIONS

- Joining brass and bronze alloys and joining cast iron to carbon steel.

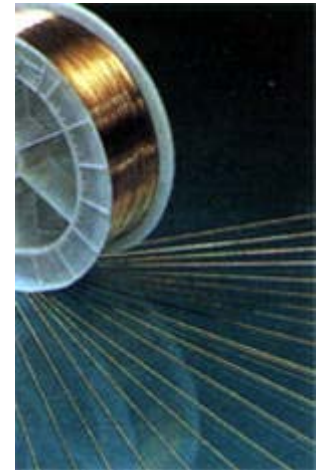
◆ CHEMICAL COMPOSITION

Copper	Iron	Lead	Phosphorus	Tin	Zinc
Remainder	.10	.05	.03-.35	7.0-9.0	.20

Note: Copper contains Silver. All values are maximum percentage, unless shown in range.

◆ PHYSICAL and MECHANICAL PROPERTIES

Melting Point:	1880°F (1027°C)
Solidification:	1620°F (882°C)
Density at 68°F:	.318 lb/in ³
Electrical Conductivity, at 68°F:	13% IACS
Thermal Conductivity, at 68°F:	36.0 btu
Electrical Resistivity at 68°F:	79.8 ohms-cmil/ft
Modulus of Elasticity – Tension:	16,000 ksi
Modulus of Rigidity:	6,000 ksi
Specific Heat Capacity:	0.09 btu/lb/°F at 68°F
Specific Gravity:	8.8
Elongation, in 2 in.:	33%
Rockwell B Hardness:	85



◆ SPECIFICATIONS MEET or EXCEED

- AWS A5.7 Class ERCuS-N-C

◆ STANDARD SIZES AND DIAMETERS

Size	Cast (12" spool)	Helix (12" spool)
3/32 or 1/8 x 36" rod	N/A	N/A
.035" dia. X 30 lb. spl	15-40"	< 1"
.045" dia. X 30 lb. spl	15-40"	< 1"
.062" dia x 30 lb. Spl	15-40"	< 1"

◆ FABRICATION PROPERTIES

Joining Technique	Suitability
Soldering	Excellent
Brazing	Excellent
Oxacetylene Welding	Fair
Gas Shielded Arc Welding	Good
Coated Metal Arc Welding	Fair
Spot Weld	Good
Seam Weld	Fair
Butt Weld	Excellent
Capacity for Being Cold Worked	Good
Capacity for Being Hot Formed	Poor
Machinability	20

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:
516-694-8690

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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	130-140	25-26	25	340-450
0.035	140-160	26-27	30	280-400
0.045	165-185	27-28	30	200-300
1/16	285-335	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"	100-120	100-120	3/8-1/2	15
3/32"-1/8"	3/32"	3/32"	185-205	165-195	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"	615-640	440-485	1/2	25

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C521: Phosphor Bronze C

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