

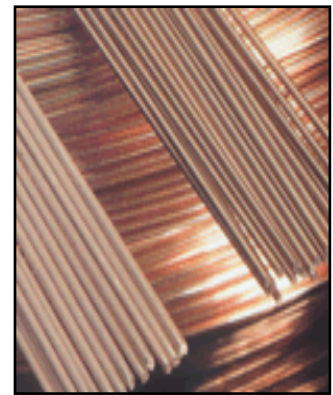
## Phosphor Bronze A

### ◆ INTRODUCTION

Aufhauser Phosphor Bronze A is a copper-zinc bronze containing approximately 5% tin and up to 0.35% phosphorus added as a deoxidizer. Tin increases wear resistance of the weld metal and slows the rate of solidification by broadening the temperature differential between the liquidus and the solidus phases. This slower solidification increases the tendency to hot shortness. To minimize this effect, the weld pool should be kept small and welding time as short as possible. Phos-Bronze A can be used to weld bronze and brass. It can also be used to weld copper if the presence of tin in the weld metal is not objectionable. When gas tungsten arc welding with Phos-Bronze A, preheating is recommended. Welding is done in the flat position only. Use to repair or fabricate castings of copper-tin alloys of similar chemical composition.

### ◆ APPLICATIONS

- MIG and TIG welding of tin-bronze base metals such as 509 to 519 series.
- Overlay welding of steel.
- Key advantages:
  - o Electrical Conductivity (15%)
  - o Thermal Conductivity (40 BTU/Square Foot)
  - o Corrosion resistance
  - o Resistance to Thermal Softening



### ◆ CHEMICAL COMPOSITION

<u>Copper</u>	<u>Tin</u>	<u>Iron</u>	<u>Phosphorus</u>	<u>Aluminum</u>	<u>Lead</u>
Remainder	4.0-6.0	0.25	0.10-0.35	0.01	0.02

Note: Copper plus named elements = 99.5% min.

### ◆ PHYSICAL and MECHANICAL PROPERTIES

Tensile Strength:	35,000 psi, min.
Brinell Hardness:	50-90 HB
Elongation:	35 %
Electrical Conductivity:	15%
Electical Resistivity:	69.1 Ohms
Solidus:	1750 F (950 C)
Liquidus:	1920 F (1050 C)

### ◆ SPECIFICATIONS MEET or EXCEED

- AWS A5.7 Class ERCuSn-A
- ASME SFA5.7 Class ERCuSn-A
- QQ-R-571C
- MIL-R-1963B Type RCuSn-A
- UNS W60518

### ◆ STANDARD SIZES AND DIAMETERS

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

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.