

# Technical Data

## HA 104

Product Code: 21104  
**Technical Data Sheet**

## ARC SPRAY BABBITT WIRE

Revision: # 003  
 Dated: 08/28/12

### INTRODUCTION

HA 104 is a high-grade Tin based, lead free Grade 2 Babbitt wire specifically designed for the twin wire arc spray process (TWAS). HA 104 is characterized by its resistance to galling. HA 104's most popular use is for bearing material. Although the metal is soft and can be easily damaged, the structure is made up of small hard crystals dispersed in a soft metal matrix. As the bearing wears, the softer metal erodes allowing a path of lubricant between the hard high spots and the bearing surface. Another area that HA 104 has excelled is within film capacitors, end caps, and other electronic components.

HA 104 is designed to operate in all Arc Spray devices, such as HAI's ARCote 9140, 9140U, 9140UW, TAFA 8830/8835, 9000, 9935, and Sulzer Metco SmartArc arc spray systems.

### CHEMICAL COMPOSITION

#### Nominal Values

Element	Tin	Antimony	Copper	Pb	TAO*
<b>Max Weight %</b>	BAL.	7.50	3.70	Trace impurity only	0.02
<b>Min Weight %</b>	BAL.	7.00	3.00	Trace impurity only	0.00

\*- Designates Total All Other impurities

### PHYSICAL PROPERTIES

#### Wire Physical Properties

Wire Size(s) diameter	1/16", 0.078", 1/8"	1.6 mm, 2mm, 3.2mm
Spool Size	OD 12"x 4" wide"; Bore ID 2"	Ø300x100 mm; Bore Ø50 mm
Pay-off-Paks	250 lbs.	114 kgs.
Spool Weight	25 lb. each	11.4 kg each
Length of Wire per lb.	102 feet	68.4 m per 1 kg

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### Coating Physical Properties

Micro Hardness R <sub>T15</sub>	32 - 35	--
Porosity	< 2 % (as sprayed)	< 2 % (as sprayed)
Melting Point	695°F	369°C
Bond Strength	2,870 psi @ 0.02" thick	19.8 MPa @ 0.5 mm thick
Deposit Efficiency	Approx. 70%	Approx. 70%

### USEFUL SPRAY DATA

#### Spraying

Spray Rate	50 lbs./hour/100 amps	22.7 kgs./hour/100 amps
Coverage	0.9 oz./ft. <sup>2</sup> /0.001	1.10 kg/m <sup>2</sup> /100 microns
Density	0.27 lbs./in. <sup>3</sup>	
Coating Density	6.67 gm./cc	
Coating Weight	0.035 lbs./ft <sup>2</sup> /mil	

### SPECIFICATIONS

AWS C2.25, AWS/SFA 5.14, MIL-W-6712C, ASTM B23 Grade 2

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### APPLICATION

#### Service Environment

Special care is required to maintain a clean surface prior to arc spraying. Coatings sprayed with HA 104 will bond fairly well without a bond coat. However, in some instances a Ni Al 95/5 (HA 775) layer maybe required for self-bonding to the surface of the part.

#### Overheating

Although the Arc spray process is considered a “Cool” process, please take special care not to overheat or burn the surface(s) of the part of component. HA 104 is a Tin based product and dust overspray can burn and smolder.

#### SPECIAL SAFETY INSTRUCTIONS

Tin and Tin based alloys are highly sensitive to air and oxygen and as such special care is required to make sure the material does not burn or smolder in the dust collector or dust collection barrels.

Please consult your local Fire & Safety Official for instructions on how to handle Tin and Tin based dusts.