LucasMilhaupt
A Handy & Harman Company
Global Brazing Solutions

Technical Data Sheet

SILVABRITE® 100
(Clean 'n Brite™ - No Lead)

NOMINAL COMPOSITION

Tin	Remainder	Antimony	0.05% Max	Arsenic	0.05% Max
Silver	0.5% ± 0.25%	Cadmium	0.005% Max	Iron	0.02% Max
Copper	4.0% ± 1.0%	Aluminum	0.005% Max	Zinc	0.005% Max
Lead	0.1% Max	Bismuth	0.02% Max		

PHYSICAL PROPERTIES

Color	White
Melting Point (Solidus)	440ºF (226ºC)
Flow Point (Liquidus)	660ºF (349ºC)
Specific Gravity	7.82
Density (lb /in^3)	.267
Electrical Conductivity (%IACS)*	12.0
Electrical Resistivity (Microhm-cm)	N/A
Bulk Room Temperature Tensile Strength (PSI)	6,900

*IACS = International Annealed Copper Standard

SOLDERING CHARACTERISTICS

This alloy is considered to be a high strength solder. Tin/Silver/Copper alloys have much higher creep strengths than the standard tin/lead solders. Joint clearances of 0.003 – 0.005 in. (0.076 – 0.13 mm) per side are optimum for achieving highest joint strength. Joints with increased clearances can still produce adequate joint strengths depending on final operating conditions. Silvabrite 100 requires fluxing when used with open air heating methods such as torch, induction or air atmosphere furnace.

PROPERTIES OF SOLDER JOINTS

The properties of a soldered joint are dependent upon numerous factors including base metal properties, joint design, metallurgical interaction between the base metal and the filler metal. Silvabrite 100 was developed as a low-cost alternative to the standard Silvabrite (96.5% Sn-3.5% Ag) soft solder. This material can be used for potable water in copper plumbing systems where no lead is permitted.

Pressure Rupture Test:
Soldered joints using Silvabrite 100 and L type copper tube (up to 1"/ 25.4mm diameter) at room temperature, 250ºF (121ºC) and 300ºF (149 ºC), withstood pressure to the extent that failure occurred in the copper tube and not the soldered joint.

Stress Rupture Test (Creep Strength):
Standard ½" (12.7 mm) copper couplings are soldered in this test and put under constant loads. The time in which the joint failed by breaking is indicated in the table below:

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PROPERTIES OF SOLDER JOINTS (CONT.)

Solder	Load				
	1,700 lbs.	1,500 lbs.	1,200 lbs.	700 lbs.	500 lbs.
SILVABRITE 100®	5 days	7-8 days	144 days	--	--
50/50 Tin-Lead	<1 day	<1 day	<1 day	5-7 days	33 days

CORROSION RESISTANCE

Using **standard Tafel** electrochemical techniques and ASTM-Corrosive Water D1384, the following corrosion test data has been compiled.

Silvabrite 100	0.31 mils/year
50/50 Tin-Lead	0.63 mils/year
95/5 Tin-Antimony	2.2 mils/year

Silvabrite 100 is twice as corrosion resistant as 50/50 Tin-Lead and seven times as corrosion resistant as 95/5 Tin-Antimony. With less corrosive water the difference between these solders will drastically increase.

AVAILABLE FORMS

Wire, engineered preforms, specialty preforms per customer specification, powder and paste.

SPECIFICATIONS

Silvabrite 100 conforms to the following specifications:

- American Society for Testing and Materials (ASTM) B32 Alloy Grade E

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 63-955, 34053.

Distribution P/N: 56761, 58587, 57110, 57111.

SAFETY INFORMATION

The operation and maintenance of brazing equipment or facility should conform to the provisions of American National Standard (ANSI) Z49.1, "Safety in Welding and Cutting". For more complete information refer to the Material Safety Data Sheet for Silvabrite 100.

WARRANTY CLAUSE

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