LucasMilhaupt®
A Handy & Harman Company
Global Brazing Solutions®

Technical Data Sheet

SILVALOY® 999
(BRAZE™ 999, 99.95% Minimum Silver)

NOMINAL COMPOSITION

Silver	99.95% Min
Copper	0.05% Max
Zinc	0.002% Max
Cadmium	0.002% Max
Lead	0.002% Max
Phosphorus	0.002% Max
Carbon	0.005% Max
Other high vapor pressure elements each (1)	0.002% Max
Total all high vapor pressure elements (Including zinc, cadmium, and lead)	0.010% Max
Total all other impurity elements	0.05% Max

(1) Elements with a vapor pressure higher than 10^{-7} Torr (1.3×10^{-5} Pa) at 932ºF (500ºC)

PHYSICAL PROPERTIES

Melting Point (Solidus)	1761°F (961°C)
Boiling Point	4010°F (2210°C)
Atomic Weight	107.9
Density (Troy oz/in^3)	5.53
Vapor Pressure	1.0 mm Hg at 2480°F (1360°C)
Electrical Conductivity (%IACS) (2)	105 at 68°F (20°C) nominal
Electrical Resistivity (Microhm-cm) (3)	1.64 at 68°F (20°C) nominal
Thermal Expansion (10^{-5}/°C)	1.90 (0°C - 100°C temperature range)
Thermal Conductivity (cal/sec/cm^2/°C/cm)	1.00 at 68°F (20°C)
Heat Capacity (cal/gm°C)	0.056 at 68°F (20°C)

(2) IACS = International Annealed Copper Standard
(3) The conductivity of silver will vary according to temper and purity. The values of conductivity and resistivity with respect to the typical values in ASTM B742 are 100% IACS and 1.72 microhm-cm, respectively.

PRODUCT USES

Silvaloy 999 is widely used in numerous electrical, electronic, and industrial applications such as contacts, fuse elements, lead wires, battery plated and ruptured discs. Fine silver is generally selected for its high thermal and electrical conductivity, as well as for its good resistance to oxidation and corrosive attack. It also exhibits excellent ductility and is easily joined by welding or brazing. Silvaloy 999 is also used to join metallized ceramics in reducing or inert atmospheres or vacuum.

BRAZING CHARACTERISITCS

Silvaloy 999, as a pure metal, melts and flows at a single temperature, meaning it will flow quickly and fill tight clearances well. While Silvaloy 999 will wet most ferrous and nonferrous surfaces, excessive hold time at braze temperature should be avoided to lessen the possibility of diffusion into the base metal, especially on copper alloys.

Lucas-Milhaupt, Inc. • 5656 S. Pennsylvania Ave • Cudahy, WI 53110 • Phone: 414.769.6000 • Fax: 414.769.1093 • www.lucasmilhaupt.com

AVAILABLE FORMS

Wire, strip, engineered preforms, and specialty preforms per customer specification.

SPECIFICATIONS

Silvaloy 999 conforms to the following specifications:

- American Welding Society (AWS) A5.8M/A5.8 BVAg-0 Grade 2
- American Society for Testing and Materials (ASTM) F106 BVAg-0

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for Silvaloy 999: A00000321, Legacy Code: 32-999.

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 Safety Data Sheet for Silvaloy 999.

WARRANTY CLAUSE

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