

SILVALOY® 503 VTG⁽¹⁾
(BRAZE™ 503 VTG⁽¹⁾ & SILVALOY® B50V)

NOMINAL COMPOSITION

Silver	50.0% ± 1.0%
Copper	Remainder
Zinc	0.002% Max
Cadmium	0.002% Max
Lead	0.002% Max
Phosphorus	0.020% Max
Carbon	0.005% Max
Other high vapor pressure elements each ⁽²⁾	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⁾ Vacuum Tube Grade

⁽²⁾ Elements with a vapor pressure higher than 10⁻⁷ Torr (1.3 x 10⁻⁵ Pa) at 932°F (500°C)

PHYSICAL PROPERTIES

Color	Silver White
Melting Point (Solidus)	1435°F (780°C)
Flow Point (Liquidus)	1600°F (870°C)
Brazing Temperature Range	1600°F - 1800°F (870°C - 980°C)
Specific Gravity	9.65
Density (Troy oz/in ³)	5.09
Electrical Conductivity (%IACS) ⁽³⁾	78.0
Electrical Resistivity (Microhm-cm)	2.20

⁽³⁾ IACS = International Annealed Copper Standard

PRODUCT USES

Silvaloy 503 (VTG) is generally used to join silver, copper and nickel base alloys in reducing or inert atmospheres or vacuum. It is also widely used to join metallized ceramics to metals in vacuum. Silvaloy 503, a VTG Grade 2 version of Silvaloy 502, is designed for all types of moderate temperature vacuum systems and particularly where maximum precautions must be taken to insure the presence of only a minimum amount of detrimental volatile impurities.

BRAZING CHARACTERISTICS

Silvaloy 503 (VTG) is a silver-copper composition alloy similar to Silvaloy 721 (BAg-8) with a wide melting range where better gap filling capabilities may be required. On either silver or copper base alloys, Silvaloy 503 (VTG) may exhibit a decreased fluidity and an increased re-melt temperature due to the solution of either silver or copper in the eutectic. Brazing time and temperature should be minimized to prevent excessive diffusion and erosion of the base metal. This filler metal has limited wetting ability on iron and/on nickel base alloys. The wetting ability it does have is derived from its copper content. Both iron and nickel have practically no solubility in silver, while nickel is readily soluble in copper and the solubility of iron in copper is sufficient to provide

wetting. It is an observed fact that the wetting obtained in good hydrogen atmospheres is superior to that derived from flux protection.

AVAILABLE FORMS

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

SPECIFICATIONS

Silvaloy 503 (VTG) VTG Grade 2 alloy conforms to the following specifications:

- American Welding Society (AWS) A5.8M/A5.8 BVAg-6b Grade 2
- ASME Boiler & Pressure Vessel Code, Sec II-C, SFA-5.8 BVAg-6b Grade 2

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for Silvaloy 503: A00000316, Legacy Codes: 32-503, 24778.

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 503 (VTG).

WARRANTY CLAUSE

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