

SILVALOY® 711 (BRAZE™ 711 VTG⁽¹⁾)

NOMINAL COMPOSITION

Silver	71.15% ± 1.0%
Copper	Remainder
Nickel	0.75% ± 0.2%
Cadmium	0.001% Max
Zinc	0.001% Max
Phosphorous	0.002% Max
Carbon	0.005% Max
Lead	0.002% Max
Other volatile elements ⁽²⁾	0.001% Max
Volatile elements total (incl. Cd, Zn, Pb)	0.010% Max
Total non-volatile elements	0.050% Max

⁽¹⁾ Vacuum Tube Grade

⁽²⁾ Elements with a vapor pressure higher than 10⁻⁷ torr at 932°F (500°C) such as Mg, Sb, K, Na, Li, Ti, S, Cs, Rb, Se, Te, Sr and Ca

PHYSICAL PROPERTIES

Color	Silver White
Melting Point (Solidus)	1435°F (780°C)
Flow Point (Liquidus)	1465°F (795°C)
Brazing Temperature Range	1465° F - 1650°F (795°C - 900°C)
Specific Gravity	9.99
Density (Troy oz/in ³)	5.26
Electrical Conductivity (%IACS) ⁽³⁾	N/A
Electrical Resistivity (Microhm-cm)	3.40

⁽³⁾ IACS = International Annealed Copper Standard

PRODUCT USES

Silvaloy 711 (VTG) can be used in all types of moderate temperature vacuum systems in particular brazing of the electronic vacuum tube assemblies.

BRAZING CHARACTERISTICS

Silvaloy 711 (VTG) is a modified silver-copper eutectic filler metal with small additions of nickel. The addition of nickel renders this alloy somewhat more sluggish flow characteristics than the eutectic composition but improves the wettability of Silvaloy 711 (VTG) on ferrous base alloys. On either silver, nickel, or copper base alloys Silvaloy 711 (VTG) may exhibit a decrease in fluidity and an increase in re-melt temperature, after brazing if some solution of base metal occurs in the filler metal.

PROPERTIES OF BRAZED JOINTS

The properties of a brazed joint are dependent upon numerous factors including base metal properties, joint design, metallurgical interaction between the base metal and the filler metal. Butt joints have been brazed and tested for tensile strength at room temperature, on the listed metals, with the following typical results:

PROPERTIES OF BRAZED JOINTS (Cont.)

	Tensile Strength (lbs/in ²)	Elongation (% in 2 in.)
Copper	30,000 - 35,000	10.0 - 19.0
Brass	35,000 - 50,000	13.0 - 25.0
Nickel-Silver	35,000 - 40,000	2.00 - 3.00
1020 Steel	45,000 - 55,000	8.00 - 12.0

AVAILABLE FORMS

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

SPECIFICATIONS

Silvaloy 711 (VTG) alloy conforms to the following specifications: N/A

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 27-711.

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 Silvaloy 711 (VTG).

WARRANTY CLAUSE

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