

SILVALOY[®] 501 (BRAZE[™] 501, SILVALOY[®] A50)

NOMINAL COMPOSITION

Silver	50.0% ± 1.0%
Copper	34.0% ± 1.0%
Zinc	16.0% ± 2.0%
Other Elements (Total)	0.15% Max

PHYSICAL PROPERTIES

Color	Yellow White
Melting Point (Solidus)	1270°F (688°C)
Flow Point (Liquidus)	1425°F (774°C)
Brazing Temperature Range	1425°F - 1600°F (775°C - 870°C)
Specific Gravity	9.25
Density (Troy oz/in ³)	4.88
Electrical Conductivity (% IACS) ⁽¹⁾	25.5
Electrical Resistivity (Microhm-cm)	6.76

⁽¹⁾ IACS = International Annealed Copper Standard

PRODUCT USES

Silvaloy 501 may be used on copper, brass, nickel-silver, bronze, steel and other non-ferrous alloys melting above 1450°F (765°C). Silvaloy 501 has a flow point low enough for most non-ferrous alloys, combined with ductility, high tensile strength and good corrosion resistance, which makes it suitable for various commercial applications. On heavily galvanized or tinned steel its low zinc content permits absorption of more zinc or tin without joint embrittlement. One of the common uses for Silvaloy 501 alloy has been in brazing of steam turbine blades.

BRAZING CHARACTERISTICS

Silvaloy 501 is an intermediate temperature silver brazing filler metal with a fairly long (175°F/100°C) melting range. This long melting range is helpful when wide gap joints are brazed and is useful in producing large joint fillets to reduce the notch effect on stressed assemblies. This alloy exhibits a high degree of ductility and malleability, which is an advantage when parts are cold worked after brazing.

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:

	Tensile Strength (lbs/in ²)	Elongation (% in 2 in.)
Copper	25,000 - 30,000	13.0 - 22.0
Brass	45,000 - 50,000	20.0 - 36.0
Nickel-Silver	45,000 - 55,000	14.0 - 28.0

CORROSION RESISTANCE

Silvaloy 501 is not considered as corrosion resistant as the higher silver content braze filler metals, but the following results were obtained from corrosion tests on this filler metal:

Solution	Test Temp.	Conditions	Loss in Weight Mgs/dcm ² /Day
Wet Ammonia Gas	Room	Closed Container	0.29
Dry Ammonia Gas	Room	Closed Container	0.22
1% Acetic Acid	200°F (95°C)	Vapor	None
10% Acetic Acid	200°F (95°C)	Vapor	48

In addition to the tests above, brazed joints of copper, brass and nickel silver have been subjected to corrosion tests. The loss in weight obtained with these tests is not given, as it is not indicative of the resistance of the Silvaloy 501 to corrosion, since the area of the exposed filler metal was small when compared to the total area of the specimen. At the conclusion of these tests, the brazed joints in general showed less corrosion than the base metal and the Silvaloy 501 stood up in relief where the base metal had dissolved faster than the joint.

AVAILABLE FORMS

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

SPECIFICATIONS

Silvaloy 501 alloy conforms to the following specifications:

- American Welding Society (AWS) A5.8/A5.8M BAg-6
- ASME Boiler & Pressure Vessel Code, Sec II-C, SFA-5.8 BAg-6
- International Organization for Standardization (ISO) 17672 Ag 250

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for this technical data sheet: A00000002, Legacy Codes: 32-501, 182.

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 501.

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Technical Data Sheet

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