

SILVALOY[®] 404 **(BRAZE[™] 404, SILVALOY[®] A40N5)**

NOMINAL COMPOSITION

Silver	40.0% ± 1.0%
Copper	30.0% ± 1.0%
Zinc	25.0.0% ± 2.0%
Nickel	5.0%± 0.5%
Other Elements (Total)	0.15% Max

PHYSICAL PROPERTIES

Color	White
Melting Point (Solidus)	1220°F (660°C)
Flow Point (Liquidus)	1580°F (860°C)
Brazing Temperature Range	1580°F - 1700°F (860°C - 925°C)
Specific Gravity	8.91
Density (Troy oz/in ³)	4.69
Electrical Conductivity (%IACS) ⁽¹⁾	13.5
Electrical Resistivity (Microhm-cm)	12.8

⁽¹⁾ IACS = International Annealed Copper Standard

PRODUCT USES

Silvaloy 404 is a special purpose, intermediate temperature silver brazing filler metal formulated principally for the brazing of carbides. It also is an effective alloy for the brazing of stainless steels.

BRAZING CHARACTERISTICS

Silvaloy 404 is a very sluggish, intermediate temperature brazing filler metal with a long (360°F/200°C) melting range. It has a strong tendency to liquate (i.e. separate into low and high melting constituents). This property is used to advantage in applying this alloy to the brazing of carbide tips. A shim of alloy placed in a joint, and heated to about 1500°F (815°C) will flow partially and make a bond while leaving a residue of high melting, nickel-rich material behind. This residue acts as a spacer and serves the same purpose as a copper insert in a sandwich braze; namely, to reduce the residual stresses in the finished joint produced by differential contraction between the carbide and steel during cooling. Handy[®] Flux Type B-1 is recommended for use with this alloy due to the relatively high flow point.

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. A few shear tests were made on Silvaloy 404 bonded joints between SAE 1092 steel and tungsten carbide. The results of these tests showed shear strengths of 35,000-40,000 PSI. Shear strengths of Silvaloy 404 joints of 8740-alloy steel/tungsten carbide range from 26,000 to 30,000 PSI.

CORROSION RESISTANCE

Silvaloy 404 can be used for brazing of 300 and 400 series stainless steels. The nickel content in this braze filler metal assists in retarding interface corrosion of the joints. The 300 series joints are more corrosion resistant than the 400 series stainless joints. For maximum resistance of 400 series stainless steels to interface corrosion, Silvaloy 630 should be used.

AVAILABLE FORMS

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

SPECIFICATIONS

Silvaloy 404 alloy conforms to the following specifications: N/A

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 32-404, 9704.

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 404.

WARRANTY CLAUSE

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