LucasMilhaupt®
A Handy & Harman Company
Global Brazing Solutions®

Technical Data Sheet

SILVALOY® 630
(BRAZE™ 630, SILVALOY® B63NT)

NOMINAL COMPOSITION

Silver	63.0% ± 1.0%
Copper	28.5% ± 1.0%
Tin	6.0% ± 0.5%
Nickel	2.5% ± 0.5%
Other Elements (Total)	0.15% Max

PHYSICAL PROPERTIES

Color	White
Melting Point (Solidus)	1275°F (690°C)
Flow Point (Liquidus)	1475°F (800°C)
Brazing Temperature Range	1575°- 1850°F (855°-1010°C)
Specific Gravity	9.72
Density (Troy oz/in^3)	5.12
Electrical Conductivity (%IACS) [(1)]	12.8
Electrical Resistivity (Microhm-cm)	13.4

[(1)] IACS = International Annealed Copper Standard

PRODUCT USES

Silvaloy 630 is a low temperature brazing filler metal used for maximum resistance to interface corrosion. It can be used on 200, 300, and 400 series stainless steels and other alloys for combined brazing/heat treatment with flux, or in protective atmosphere (including vacuum) furnaces. It is used in vacuum applications, and in joints where greater oxidation resistance than the other silver brazing alloys is required. It is also used in surgical and food-handling equipment requiring cadmium-free alloys. Silvaloy 630 can be used on joints exposed to conditions favoring dezincification of zinc-coating alloys such as salt-water at elevated temperatures.

BRAZING CHARACTERISTICS

Silvaloy 630 is very sluggish because of its wide melting range, and it will bridge wide or irregular joint clearances. To avoid liquation (separation and flow of the low-melting components) the joint and alloy pre-placement should be designed for a minimum distance of flow (i.e., pre-placed sheet-preforms), particularly when slow heating will occur through the melting range. Fast heating through the melt range of the alloy or application of the alloy after the joint is at temperature will minimize liquation. Heating the assemblies above 1700°F (925°C), as in brazing/heat-treatment, will improve the fluidity of the brazing alloy. Handy® Flux is usually recommended for use with Silvaloy 630 when brazing the 400 series stainless steels with torch, air-gas burner, or RF induction coil. Joint clearances of 0.002" - 0.005" (.05 mm -.13 mm) are recommended. Silvaloy 630 can be used in protective atmosphere (including vacuum) furnace brazing without flux. Excellent joints with good smooth fillets can be obtained on stainless steels at furnace temperatures of 1700° - 1850°F (925°C-1010°C) with a H_2N_2 atmosphere having a dew point of -50°F or lower and joint clearances of 0.002" - 0.005" (0.05 mm - 0.13 mm).

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PROPERTIES OF BRAZED JOINTS

It has been found that joints on the 400 series stainless steels, when made with nickel-free silver brazing alloys and flux, are subject to failure from interface corrosion when exposed to moisture. Silvaloy 630 was developed for the specific purpose of minimizing this difficulty and, when properly used, will give joints on the 400 series stainless steels which are practically immune from interface corrosion caused by exposure to moisture. The corrosion resistance of joints with Silvaloy 630 appears to be the result of the deposition of a continuous thick nickel-rich layer on the surface of the steel during solidification of the brazing filler metal. The addition of tin and nickel leads to improved oxidation and general corrosion resistance over the silver-copper and the silver-copper-zinc filler metals

AVAILABLE FORMS

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

SPECIFICATIONS

Silvaloy 630 alloy conforms to the following specifications:

- American Welding Society (AWS) A5.8/A5.8M BAg-21
- ASME Boiler & Pressure Vessel Code, Sec II-C, SFA-5.8 BAg-21
- Society of Automotive Engineers (SAE) / AMS 4774
- International Organization for Standardization (ISO) 17672 Ag 463

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for this technical data sheet: A00000032, Legacy Codes: 32-630, 10694.

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 630.

WARRANTY CLAUSE

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