

SIL-FOS® 2

(SILVALOY® EXCEL 2, SILVALOY® 2)

NOMINAL COMPOSITION

Silver	2.0% ± 0.20%
Phosphorus	7.0% ± 0.20%
Copper	Remainder
Other Elements (Total)	0.15% Max

PHYSICAL PROPERTIES

Color	Gray
Melting Point (Solidus)	1190°F (645°C)
Flow Point ⁽¹⁾	1325°F (718°C)
Brazing Temperature Range	1325°F - 1500°F (718°C - 815°C)
Specific Gravity	7.97
Density(lbs/in ³)	0.288
Electrical Conductivity (%IACS) ⁽²⁾	5.50
Electrical Resistivity (Microhm-cm)	31.5

⁽¹⁾ The true liquidus of this alloy is 1450°F (788°C). The alloy will flow freely and make strong joints at 1325°F (718°C).

⁽²⁾ IACS = International Annealed Copper Standard

PRODUCT USES

Sil-Fos 2 is a low cost brazing filler metal suitable for joining copper to copper and copper to copper alloys where critical impact or vibration stresses are not encountered in service. It should only be used on assemblies where good fit-up can be maintained.

BRAZING CHARACTERISTICS

Sil-Fos 2 is a copper-rich, intermediate temperature, brazing filler metal that is free flowing and self-fluxing on copper by virtue of its phosphorus content. This alloy is extremely fluid when heated rapidly to its flow point and will penetrate joints with very little clearance. Best results are obtained with joint clearances of 0.001 in. - 0.003 in. (0.025 mm - 0.075 mm). Sil-Fos 2 liquates (i.e. separates into high and low melting constituents) if heated slowly through its melting range. The self-fluxing property of Sil-Fos 2 is effective on copper only. Copper base alloys, such as brass or bronze, may be brazed with Sil-Fos 2 but cannot be used on ferrous metals or nickel base alloys, since the phosphorus produces brittle iron or nickel phosphorus at the joint interface.

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. Joints made with Sil-Fos 2 are entirely satisfactory on copper and soft copper alloys if good fit-up and adequate shear area are maintained. If poor fit-up prevails, or shear area is marginal, a lower phosphorus content silver-copper-phosphorus alloy such as Sil-Fos or Sil-Fos 5 may be preferred, particularly if the joints are to be subjected to impact or vibration in service.

CORROSION RESISTANCE

The corrosion resistance of Sil-Fos 2 is comparable to that of copper except when exposed to sulphur-containing compounds, especially at elevated temperatures. Under these conditions Sil-Fos 2 undergoes progressive deterioration. Exposure to pressurized steam can also result in accelerated corrosion.

AVAILABLE FORMS

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

SPECIFICATIONS

Sil-Fos 2 alloy conforms to the following specifications:

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

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 71-020, 35591, 2774.

Distribution P/N: 95030, 95041.

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 Sil-Fos 2.

WARRANTY CLAUSE

Lucas-Milhaupt, Inc. believes the information contained herein to be reliable. However, the information is given by Lucas-Milhaupt, Inc. without charge and the user shall use such information at its own discretion and risk. This information is provided on an "AS IS" AND "AS AVAILABLE" basis and Lucas-Milhaupt, Inc. specifically disclaims warranties of any kind, either express or implied, including, but not limited to, warranties of title or implied warranties of merchantability or fitness for a particular purpose. No oral advice or written or electronically delivered information given by Lucas-Milhaupt, Inc. or any of its officers, directors, employees, or agents shall create any warranty. Lucas-Milhaupt, Inc. assumes no responsibility for results obtained or damages incurred from the use of such information in whole or in part.