

## **SIL-FOS<sup>®</sup> 18** **(SILVALOY<sup>®</sup> 18M, 35216)**

### ***NOMINAL COMPOSITION***

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Silver	17.6% ± 0.40%
Phosphorus	6.35% ± 0.35%
Copper	Remainder
Other Elements (Total)	0.15% Max

### ***PHYSICAL PROPERTIES***

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Color	Gray
Melting Point (Solidus)	1190°F (645°C)
Flow Point (Liquidus)	1190°F (645°C)
Brazing Temperature Range	1190°F - 1300°F (645°C - 705°C)
Specific Gravity	8.20
Density (lbs/in <sup>3</sup> )	0.296
Electrical Conductivity (%IACS) <sup>(1)</sup>	5.90
Electrical Resistivity (Microhm-cm)	29.4

<sup>(1)</sup> IACS = International Annealed Copper Standard

### ***PRODUCT USES***

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Sil-Fos 18 is a moderate cost brazing filler metal suitable for joining copper, brass and bronze alloys where low brazing temperature and free flowing characteristics are required. It should be used on assemblies where good fit-up can be maintained.

### ***BRAZING CHARACTERISTICS***

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Sil-Fos 18 is a ternary eutectic, low temperature brazing filler metal that is free flowing and self-fluxing on copper and some high copper and copper alloys by virtue of its phosphorus content. Brasses and most bronzes require the use of Handy<sup>®</sup> Flux (or Handy<sup>®</sup> Flux Type A-1 on Aluminum Bronze or Beryllium Copper) for good wetting. This alloy becomes extremely fluid above its melting point. With most joint designs a clearance of 0.001 in. to 0.003 in. (0.025 mm. - 0.075 mm) is desirable. Sil-Fos 18 should not be used on ferrous metals or nickel base alloys, since the phosphorus diffuses and produces brittle iron or nickel phosphides at the joint interface.

### ***PROPERTIES OF BRAZED JOINTS***

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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 18 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 may be preferred, particularly if the joints are to be subjected to impact or vibration in service.

### ***CORROSION RESISTANCE***

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The corrosion resistance of Sil-Fos 18 is comparable to that of copper except when exposed to sulfur-containing compounds, especially at elevated temperature. Under these conditions Sil-Fos 18 undergoes progressive deterioration. Exposure to pressurized steam can also result in accelerated corrosion.

## ***AVAILABLE FORMS***

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

## ***SPECIFICATIONS***

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Sil-Fos 18 alloy conforms to the following specifications:

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

## ***APPLICABLE PRODUCT CODE(S)***

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The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 71-180, 35216.

## ***SAFETY INFORMATION***

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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 18.

## ***WARRANTY CLAUSE***

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