

**TECHNICAL DATA SHEET**

**SIL-FOS 6M**

**Nominal Composition:** Silver: 6.0% ± 0.25%  
 Copper: 88.0% ± 1.0%  
 Phosphorus: 6.0% ± 0.25%  
 All Others: 0.15% maximum

**Physical Properties:** Colour: Gray  
 Solidus (Melting Point): 643°C (1190°F)  
 Liquidus (Flow Point) 813°C (1495°F)  
 Specific Gravity 8.14  
 Density (lbs./cu.in.) 0.294  
 Electrical Conductivity (%IACS) 9.6  
 Electrical Resistivity (Microohm-cm) 18.1  
 Brazing Temperature Range 718°-816°C (1325°-1500°F)

**Uses:** Sil-Fos 6M was developed primarily for use on copper, but has extended to use on other nonferrous copper base alloys. It is used extensively on refrigeration units, air conditioning apparatus, electrical conductors, copper and brass pipe fittings, and other copper and brass equipment.

**Brazing Characteristics:** Sil-Fos 6M is a copper rich alloy that is self fluxing on copper by virtue of the phosphorus content. Sil-Fos 6M is useful where close clearances cannot be maintained or where fillets are specified. Sil-Fos 6M has a strong tendency to liquate (i.e. to separate into low and high melting constituents) if heated slowly through their melting range, as normally occurs in furnace brazing. This results in leaving a "skull" of unmelted alloy behind which may be objectionable from the standpoint of appearance. In furnace brazing it is preferable to preplace the alloy inside the joint where the "skull" is not visible. The self-fluxing of this alloy is effective on copper only. With copper based alloys, such as brass or bronze, the joints should be fluxed with Handy Flux. Sil-Fos 6M should not be used on nickel-base or ferrous alloys, as the phosphorus reacts with the nickel or iron to form brittle compounds at the interface of the joints.

**Properties of Brazed Joints:** The properties of a brazed joint are dependent upon the base metal, joint design, brazing technique, etc. The following information, however, should serve as a guide for estimating the results that can be achieved with Sil-Fos 6M on copper and copper base alloys.

Brazed butt joints tested at room temperature gave the following average values:

	Tensile Strength psi	Elongation % in 2"
Copper	30,000 – 35,000	15.0 – 25.0
Brass	35,000 – 40,000	20.0 – 25.0
Nickel-Silver	35,000 – 40,000	2.0 – 5.0

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**Corrosion Resistance:** Normally the corrosion resistance of Sil-Fos 5 is of the same order as copper, but under certain conditions it may corrode more rapidly. Sil-Fos 5 should not be used where the joints are exposed to sulphur compounds, especially in gases or oils at temperatures above normal room temperature. As the corrosion by sulphur is cumulative, even very small percentages will eventually cause failure of the joint by disintegration. Exposure to pressured steam can also result in accelerated corrosion.

**Equivalent Specifications:** There are presently no known government of society specifications for this filler metal.

**Available Forms:** Wire and limited preforms to specification.

**Comments:** Handy & Harman of Canada, Limited believes the information contained herein to be reliable. However, the technical information is given by Handy & Harman of Canada, Limited without charge and the user shall employ such information at its own discretion and risk, and Handy & Harman of Canada, Limited assumes no responsibility for results obtained or damages incurred from the use of such information in whole or in part.

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