

## Technical data

# Silver Copper Phosphorus Brazing Filler Metal

## Sil-fos™ 5 – Silver Copper Phosphorus Brazing Filler Metal

### Product description

Sil-fos™ 5 is a 5% silver-copper-phosphorus brazing filler metal, which is used to braze copper and copper alloys. When brazing copper the phosphorus within the alloy imparts a metallurgical based self-fluxing capability. When Sil-fos™ 5 is used to join copper alloys (such as brass, bronze or gun metal) a separate flux will be required because the self-fluxing action only occurs on copper (see below for details).

This filler metal should not be used to braze iron containing materials like carbon or stainless steels or nickel containing materials as the phosphorus within the filler metal will form brittle, intermetallic, phosphide compounds, at the joint interface. Sil-fos™ 5 is not suitable for use in sulphurous atmospheres at elevated service temperatures.

When selecting a brazing filler metal from the Sil-fos™ range it is necessary to understand about the flow and ductility of the different products. Phosphorus is the key element, the higher this is the more free flowing the filler metal, but the lower its ductility. Silver is used to improve the filler metal's ductility, but reduces its flow properties.

Sil-fos™ 5 provides the best combination of flow and ductility of all the silver-copper-phosphorus type brazing filler metals. Sil-fos™ 5 is less ductile than Sil-fos™, more ductile than Silbralloy™ but more free flowing than both.

The optimum joint gap for brazing is normally 0.05-0.2mm.

**Composition:** 5%Ag, 89%Cu, 6%P

**Conforms to:** EN 1044 1999 CP104, AWS A5.8 BCuP-3, ISO 17672:2010 CuP 281

**Melting range:** 644-815 °C\*

\*The flow point for this filler metal is approximately 710 °C

### Uses for this product

Sil-fos™5 is extensively used in refrigeration, air conditioning and heat-exchanger components for flux-free brazing of copper pipes and tubes. It is also used for joining copper in electrical engineering applications

### Conditions for use

Flame heating methods are most often used for brazing with Sil-fos™ 5. When used as a pre-form rapid heating to the brazing temperature is required to avoid liquation (separation of low and high melting phases in the alloy). For brazing copper to copper no flux is needed, as Sil-fos™ 5 is self-fluxing in this case.

For use on copper alloys a separate flux is required and Easy-flo™ Flux is generally suitable, but in applications where protracted heating to the brazing temperature is likely to occur the use of Tenacity™ No.4A Flux Powder or Tenacity™ No.5 Flux Powder may need to be considered.

### Product availability

Brazing rods	1.5 mm, 2 mm, 2.5 mm, 3 mm
Wire	1 mm to 3 mm
Other	Braze-pastes on request

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