

## Technical data

# Silver Copper Phosphorus Brazing Filler Metal

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

### Product description

Sil-fos™ Plus is an 18% 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™ Plus 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™ Plus 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, the lower its ductility. Silver is used to improve the filler metal's ductility, but reduces its flow properties.

Sil-fos™ Plus is the most free flowing filler metal from the Sil-fos™ range. However, due to its high phosphorus content it is one of the least ductile. The low ductility of the alloy imparts it with glass like properties, making it both 'notch' sensitive and sensitive to impact type loadings. This filler metal should therefore not be used in applications involving exposure to strong vibration, impact loads or where some deformation of the joint might be expected in service. In such circumstances the use of the more ductile Sil-fos™ or Sil-fos™ 5 filler metals should be considered. Sil-fos™ Plus is best suited for making copper joints that are of the true capillary type and where tight joint clearances of 0.025-0.075 mm are used. When used in such joints, the poor mechanical properties of the filler metal are exposed and satisfactory joints, suitable for use in all but the most extreme conditions can generally be produced..

**Composition:** 18%Ag, 75%Cu, 7%P

**Conforms to:** EN1044 CP101, ISO 17672:2010 CuP 286

**Melting range:** 644 °C (Filler metal has a single melting point being of a eutectic composition)

### Uses for this product

Sil-fos™ Plus is ideal for the flux free brazing of copper pipes and tubes and other copper to copper joints, including those used in electrical applications.

### Conditions for use

Flame heating methods are most often used for brazing with Sil-fos™ Plus. For brazing copper to copper no flux is needed, as Sil-fos™ Plus is self-fluxing in this case.

For use on copper alloys a separate flux is required and Easy-flo™ Flux Powder is suitable.

### 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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