



## Argo-braze™ 49CN Tri-foil – Silver Brazing Filler Metal

Argo-braze™ 49CN Tri-foil is a recent, cadmium free addition to Johnson Matthey's range of tri-foil products. It is used for the brazing of tungsten carbide to steel, and combines the key features of two other Johnson Matthey tri-foils. Firstly the proven Argo-braze™ 49LM brazing filler metal and secondly the central base metal core of a product developed by Johnson Matthey in the 1980's Easy-flo™ Tri-foil CN. This material was developed for the joining of tungsten carbide to steel where the joints were subjected to impact type loading in service, such as coal pulverizing tools, and premature joint failures were experienced when standard tri-foil products were used.

The newly developed Argo-braze™ 49 CN Tri-foil will have the brazing characteristics of the now globally accepted 49%Ag, 27.5%Cu, 20.5%Zn, 2.5%Mn, 0.5%Ni Argo-braze™ 49LM filler metal, along with an enhanced central core material designed to deal with percussive / impact stresses in service, as well as the stresses developed in tungsten carbide to steel joints on cooling. As with all tri-foil products, the product consists of three layers. These layers are in a 1:2:1 ratio of silver brazing filler metal: a specially modified base metal interlayer: silver brazing filler metal.

The normal principals for the use of tri-foils apply to this material, namely in applications involving the brazing of large tungsten carbide segments where it is necessary to artificially thicken the joint by introducing a shim or thin layer of base metal coated on each side with brazing alloy. This base metal layer is designed to accommodate the stresses arising from the differential expansion and contraction of the parent metals. The thicker joint will allow for relief of stresses in the component and thus reduce the incidence of carbide cracking. The Argo-braze™ 49LM filler metal used on the product contains additions of nickel and manganese that have been found to aid wetting and bonding to tungsten carbide. These additions are particularly of use when brazing difficult to wet carbides, those low in cobalt or those that contain titanium or tantalum carbide.

<b>Composition:</b>	49%Ag, 27.5%Cu, 20.5%Zn, 2.5%Mn, 0.5%Ni
<b>Conforms to:</b>	JM specification
<b>Melting range:</b>	670-705°C

### Uses for This Product

This product is new and hence should be tested by companies wishing to use it to prove that it offers benefits over and above the current brazing materials being used. It is intended for brazing of tungsten carbide segments to steel components. In particular it has been designed for the manufacture of tungsten carbide tipped tools and saw blades working under increased stress.

### Conditions for Use

Use a boron modified 'brown' flux such as Tenacity™ No. 6 Powder or Paste in conjunction with Argo-braze™ 49CN Tri-foil.

### Product Availability

This product is currently on trial at selected customers.

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