Technical data

Gold bearing brazing filler metal

Gold - copper OROBRAZE™ - Brazing filler metal

Product description

This datasheet covers the gold-copper OROBRAZE™ brazing filler metals. These high purity filler metals show good resistance to oxidation at elevated temperatures and excellent corrosion resistance in many chemical environments.

Gold-copper OROBRAZE™ filler metals are suitable for use in the fabrication of vacuum tube / thermionic valve devices as both gold and copper have low vapour pressures under the elevated temperature and levels of vacuum seen in such items.
In addition several of these filler metals can be supplied such that they contain only minimum levels of volatile elements meeting the requirements of ISO 17672 – Grade V1 (vacuum grade 1 materials) – see table below. The gold-copper OROBRAZE™ filler metals have relatively short melting ranges and free flowing characteristics, and come with ever increasing series of melting ranges allowing their use in step brazing operations. Typical joint gaps are between 0.025-0.1mm depending on parent materials and joint configuration.
Gold-copper OROBRAZE™ filler metals can produce ductile joints without excessive inter-alloying / erosion of the parent metals, which is advantageous when brazing thin walled structures. They form small radius smooth fillets at the joint edges.

Filler metal	Composition	Melting range ˚C	Specification: ISO 17672: 2010
OROBRAZE™ 890	80%Au, 20%Cu	890	Au 800
OROBRAZE™ 940	62.5%Au,	930-940	Au 625 V1
OROBRAZE™ 970	50%Au, 50%Cu	955-970	Au 503
OROBRAZE™ 998	37.5%Au,	980-998	Au 375 V1
OROBRAZE™ 1005	35%Au, 65%Cu	970-1005	Au 354
OROBRAZE™ 1018	30%Au, 70%Cu	996-1018	Au 295 V1
OROBRAZE™ 1045	70%Au, 22%Ni,	1005-1045	Au 700
OROBRAZE™ 1078	10%Au, 90%Cu	1062-1078	

Impurity limits applicable (%by mass, max.): - Maximum impurity limits applicable to all types are (% by mass) Al 0,0010, Cd 0,010, P 0,008, Pb 0,025, Ti 0,002, Zr 0,002;total of all impurities = 0,15.

Impurity limits for special vacuum requirements - Grade V1 (%by mass, max.): - C 0.005, Cd 0.001, P 0.002, Pb 0.002, Zn 0.001, Mn 0.001, In 0.002. All other elements where vapour pressure at 500 °C is > 1,3 × 10−5 Pad

Johnson Matthey PLC, Platinum Group Metal Services, Orchard Road, Royston, Herts, SG8 5HE, UK Rev.27/01/25.

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Uses for this product

Typical applications are for brazing vacuum tube / thermionic valve devices. Gold-copper OROBRAZE™ filler metals exhibit good wetting on copper, nickel, iron, cobalt, molybdenum, niobium, tungsten and their alloys, and due to their good ductility are also useful for brazing metallised ceramics.

Conditions for use

Gold-copper OROBRAZE™ filler metals are most commonly brazed in reducing atmosphere furnace brazing operations, but may also be applied using vacuum brazing techniques. Under these conditions no flux is used.

Product availability

All forms are manufactured to order

Wire	0.25mm to 3mm
Foil	Widths from 2mm to 100mm, 0.08mm to 0.5mm thick
Braze-pastes	Packed in syringes or cartridges
Powder	Various particle sizes

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