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# 15 Silver - 80 Copper – 5 Phosphorus

## AWS BCuP-5
## Physical Properties of Bulk Solder

| | |
|---|---|
| Solder Alloy Composition | 15Ag80Cu5P (weight per cent) |
| Solidus | 643°C (1190°F) |
| Liquidus | 802°C (1300°F) |
| Density | 8.36 kg/l |
| Electrical Conductivity | 9.9% IACS |
| Electrical Resistivity | 17.4 μΩ cm |

Brazing temperature should be 705 - 800ºC for a minimal time of 5 seconds flow on copper substrate. This assumes reasonably-clean brazing surfaces and controlled atmosphere during the brazing cycle. If and when the components are slightly oxidized, a combination with higher temperatures and/or longer brazing temperatures is required.
Joint clearance is recommended at 0.0015” - .005” (38-127μm).
Other substrate materials like Kovar, Molybdenum and Tungsten require attuned brazing conditions, longer and higher temperature profiles.
Alloy 20308 has several advantages, in the right circumstances.

1) The P content allows it to be used in circumstances where fluxing and/or protective/reducing atmospheres are difficult or impossible to use. The P itself acts as a flux on alloys such as molybdenum, copper, brass, bronze, silver, etc.
2) The alloy will wet most materials besides the copper based ones, provided they are clean. As with all brazes, a protective or reducing atmosphere does a better job.
3) The braze wets almost immediately above the solidus. This means it can be used at a relatively low temperature for Ag containing brazes. (It competes with Cd- and Zn- containing Ag brazes in the same temperature range).
4) Because it wets close to the solidus, there is a healthy amount of solid present after wetting. This sustains the “bulk” of the braze, allowing it to be used in applications where larger than usual gaps must be filled.
5) As a consequence of 4), unusual preform configurations tend to retain their shape during brazing, which gives a good deal of control over flow of the braze.