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ELECTRONIC COMPONENTS  
AND PACKAGING

## Product Information –Alloy 20204

### 72 Silver - 28 Copper

#### Physical Properties of Bulk Solder

Solder Alloy Composition	Ag72Cu28 (weight per cent)
Eutectic temperature	779°C (1190°F)
Density	10.01 kg/l
Young's modulus	83 GPa
Yield strength	272 MPa
Tensile strength	372 MPa
Thermal conductivity	371 W/(m.K)
Electrical Conductivity	77% IACS
Electrical Resistivity	2.2 $\mu\Omega$ cm
C.T.E.	19.6 ppm/K

The chemical composition requirements follow the ANSI/AWS A5.8 standard which specifies that the alloy must be analyzed for Ag (71.0-73.0 weight-%) with Cu as remainder. The total impurities level (Zn, Cd, Ni, Sn, Li and Mn) may not exceed 0.15 weight-%. Typical purity level is 99.99%.

The eutectic Ag72Cu28-alloy is generally used to join, silver, copper and nickel base alloys in reducing or inert atmospheres or vacuum. It is also widely used for joining ceramics to metals in vacuum. Brazing temperature should be 790 - 925°C for a minimal time of 5-20 seconds, depending the joining materials. This assumes reasonably-clean brazing surfaces or 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" (38-127 $\mu$ m).

During brazing joints on either copper- or silver-base alloys, the braze exhibits decreased fluidity and an increased remelt temperature, due to the solution of either silver or copper in the eutectic. Brazing time and temperature should be minimized to prevent excessive diffusion and erosion of the base metal.

The filler material has limited wetting ability on iron and/or nickel base alloys. The wetting it does have is derived primarily from its copper content. Both nickel and iron have practically no solubility in silver, while nickel is readily soluble in copper and the solubility of iron in copper is sufficient to provide wetting.

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