

AN IMPROVED SOLDER PASTE MIXTURE

Abstract

A solder paste is composed of a vehicle (or flux) system and a mixture of at least two solder powders. One component of this mixture is a eutectic or near-eutectic Sn/Pb alloy powder, while the other component comprises powders selected from at least one elemental metal powder or at least one solder alloy powder or at least one elemental metal powder and at least one solder alloy powder. Said other component is a powder or combination of powders each of which has a liquidus temperature which is lower by at least 5 degrees Centigrade (°C) than the solidus temperature of said eutectic or near-eutectic Sn/Pb alloy powder or a solidus temperature which is higher by at least 5°C than the liquidus temperature of said eutectic or near-eutectic Sn/Pb alloy powder. The eutectic or near-eutectic Sn/Pb powder makes up from 5 to 95 weight percent of the total powder mixture. Alternatively, not all powders which comprise the second component need to obey this rule so long as at least 30% by wt. of the entire powder mixture has a solidus temperature which is at least 5°C higher than the highest liquidus temperature of the eutectic or near-eutectic Sn/Pb alloy powder. This solder paste results in an uncompromised consolidation and wetting process in which all of the solder joints or balls are formed on and wetted to an appropriate contact by the solder reflow process.