

The effects of glass coated silver powders for Ag electrode

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Screen printed Ag thick films have applied extensively for making electrical contacts in solar cells, hybrid circuits and other devices due to their excellent electrical properties. The Ag thick film pastes consist of active metal powder, glass frit, and organic phase. Although glass frit holds the minimum weight percentage in the paste (1~10wt %), it plays the most important role as the binder phase. The glass frit not only attaches silver powders to the substrate during sintering process but also dissolves the silver powder sintering kinetics. In conductive paste, the distribution of glass frit and silver powder is one of the important characters in determining the behavior of glass.

In this study, the silver-glass composite powders with core-shell structure were directly synthesized by aerosol process and the effects of the powders on the characteristics of silver thick film formed by screen printing were investigated. The results showed that the thick film had dense inner structure even at a low sintering temperature. The sheet resistance of the film was lower than the silver thick film formed from mixed silver-glass paste.