

Evaluation of Flexographically Printed Conductive Traces on Paper Substrates

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Abstract

Results of print trials of different silver-based conducting inks on different paper and paperboard substrates are presented. Printability (based on optical appearance) and electrical properties are analyzed for their dependence on substrate properties. In particular, it was observed that traces printed with solvent-based inks have better print quality compared to water-based inks at higher anilox cell volume. However, sheet resistivity of traces printed with water-based inks were less than those achieved with solvent based inks for the same printing conditions, probably due to higher solids content and smaller particle size. Bulk resistivity was observed to be less for traces printed with 100% tint due to better ink coverage and higher ink film thickness. The results indicate that printing of conductive components on paper substrates is a viable option for low cost electronics.

Antenna performance was seen to be slightly better for water-based inks than for solvent-based inks. However, acceptable antenna performance was obtained for both inks on all substrates.

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