

INTERNATIONAL STANDARD



Printed electronics –

Part 202-8: Materials – Conductive ink – Measurement of difference in resistance of printing direction of conductive film fabricated with wire-shaped materials



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRINTED ELECTRONICS –

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The language used for the development of this International Standard is English.

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INTRODUCTION

The printing process for fabricating flexible devices is a very promising technology due to its high conductivity and efficiency. Specifically, a printed metal-based conductive layer on a flexible substrate can be employed as electrode or be interconnected for flexible devices. It can be commercialized as a type of composite material where the conductive layer is formed on the substrate as a conductor.

For metal-based transparent conductive (TC) films, silver or copper nanowires or metal mesh on a flexible substrate are a key component for many recently developed electronic products, ranging from smartphones to keypads of appliances such as refrigerators and washing machines. While indium tin oxide (ITO) is the conventional material for TC films, metal-based TC films fabricated using printed electronics technologies are being increasingly used as an alternative. TC film-fabricated nanowires have superior intrinsic properties owing to their wire shape. Their electrical performance can differ based on the printing direction and ink properties. The alignment of a wire depends on the printing equipment, ink composition, printing process, etc. [1] to [3]¹.

In this document, a method to evaluate the difference in electrical properties based on the printing direction is proposed. In particular, the proposed method monitors changes in the resistance of a printed metal-based TC film on a flexible substrate.

¹ Numbers in square brackets refer to the Bibliography.