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Printed electronics –
Part 402-1: Printability – Measurement of qualities – Line pattern widths

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PRINTED ELECTRONICS –

Part 402-1: Printability – Measurement of qualities – Line pattern width

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IEC 62899-402-1 has been prepared by IEC technical committee 119: Printed electronics. It is an International Standard.

This second edition cancels and replaces the first edition published in 2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) The title is changed from 'Printability – Measurement of qualities – Pattern width' to 'Printability – Measurement of qualities – Line pattern width'
b) The term 'pattern width' is specified as 'line pattern width'.
c) The measurement method of line pattern space is included.

d) The definition and measurement of inner/outer edge lines are removed.

The text of this International Standard is based on the following documents:

Draft	Report on voting
119/539/FDIS	119/544/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

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

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 62899 series, published under the general title *Printed electronics*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

This document contains fundamental information on the measurement of line pattern width in printed electronics. The line pattern width includes not only width of line pattern but also space between line patterns. This document includes measurement procedures as well as definitions of width and space of line pattern considering their non-uniform properties, which are quite different from those in graphic art printing or the etching process. For example, in graphic art printing, the dimension of pattern is generally more than several millimetres and its variation is relatively small and negligible. However, in printed electronics, the printed line patterns, through printing processes such as inkjet, gravure, flexography, etc., can have very narrow width of under several tens of micrometres. Moreover, the variation of line pattern width can be relatively large due to rough edges, which is hardly observed in the etching process. Therefore, it is difficult to define the width of line pattern exactly. The space between patterns has the same issues to those of line pattern width. The accurate information about line pattern width can be very important for control and management of printability in the printing process. Moreover, the dimension of line pattern width as well as variations can strongly affect the reliability and performance of printed electronics devices made of several sets of patterns.

This document excludes the standardization of the measurement system. It specifies the properties related to the width and space of the printed line patterns obtained from the two-dimensional image.

PRINTED ELECTRONICS –

Part 402-1: Printability – Measurement of qualities – Line pattern width

1 Scope

This part of IEC 62899 specifies the measurement methods of the width of line pattern and spaces between the line patterns in printed electronics. These printed line patterns are treated as two-dimensional on a substrate. When the patterns are definitely affected by three-dimensional configurations, these are specified in measurement methods for vertical variance in printed electronics.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 187, *Paper, board and pulps – Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

ISO 291, *Plastics – Standard atmospheres for conditioning and testing*