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Printed electronics -
Part 403-2: Printability - Requirements for reproducibility - Basic patterns for printing plate

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Printed electronics - Part 403-2: Printability - Requirements for reproducibility - Basic patterns for printing plate

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

Draft	Report on voting
119/569/FDIS	119/577/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– withdrawn, or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 provides commonly utilized design patterns for evaluating printability with focus on printing plate micro pattern resolution. Reproducibility of micro patterns in printed electronics is checked by the size and shape of line and space patterns affected by printing plate. Precision quality of the high-resolution printing plate is key to the fabrication of the fine patterning that makes up electronic circuits and components in the field of printed electronics manufacturing. Quality and reproducibility of the printing technology in electronics manufacturing help to facilitate international trade and enhanced user value in the field of printed electronics. The IEC 62899-403 series contains basic patterns to evaluate the printability of patterns from the viewpoint of printing machine, printing plate, and applications for printed electronics manufacturing. The printability is estimated by both the quality of printed patterns and the reproducibility of printing designs. On the other hand, the reproducibility of the printed pattern is achieved by estimating the fidelity from the printing design date. IEC 62899-403-1 provides commonly utilized design patterns for evaluating printability by the point of operation accuracy of the printing machine.

The quality of printed patterns is ensured by accurate measurements of their size and dimensions (2D and/or 3D). The printability of patterns can be measured with the methods provided in the IEC 62899-402 series.

1 Scope

This part of IEC 62899 specifies commonly utilized basic design patterns to evaluate the reproducibility of printed pattern from the viewpoint of the quality of printing plate for the printed electronics. Printing plates in this document include not only gravure, relief (flexo), and offset plates, but also a cylinder for rotary printing and mesh masks for screen printing. Inkjet printing is out of the scope of this document.

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.

IEC 62899-402 (all parts), *Printed electronics - Part 402-X: Printability*

ISO 3, *Preferred numbers - Series of preferred numbers*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/
– ISO Online browsing platform: available at https://www.iso.org/obp

3.1
basic pattern
set of two-dimensional figures for inspecting the reproducibility of printed patterns, consisting of the evaluation pattern and alignment marks used for accurate positioning of the substrate with respect to the printing apparatus

[SOURCE: IEC 62899-101:2019, 3.10]

3.2
printing plate
critical component with designed pattern or image for temporary storing and transferring an inked pattern or image to a substrate in a printing process

Note 1 to entry: Printing plate is often referred to as relief plate in flexography process, planographic plate in lithography, intaglio in gravure process and screen mesh (mask) in screen printing.

[SOURCE: IEC 62899-401:2025, 3.4]

3.3
machine direction
direction in which the substrate or stock moves during printing

[SOURCE: IEC 62899 -101:2019, 3.80]