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Graphic technology - Laboratory preparation of test prints - Part 2: Liquid printing inks

Technologie graphique — Préparation en laboratoire des impressions d'essai — Partie 2: Encres d'impression liquides

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Graphic technology — Laboratory preparation of test prints —

Part 2: Liquid printing inks

Technologie graphique — Préparation en laboratoire des impressions d'essai —
Partie 2: Encres d'impression liquides

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

This third edition cancels and replaces the second edition (ISO 2834-2:2015), which has been technically revised.

The main changes are as follows:

— parameters describing the preparation of printing forms and anilox cylinders are replaced by data (to be acquired by the user of this document) describing the ink transfer of particular settings of tester, printing forme, ink and substrate.

A list of all parts in the ISO 2834 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document describes the test print preparation of liquid inks (gravure and flexography). These test prints have a homogeneous distribution of ink on a substrate, a reproducible ink composition and relative ink coverage. Therefore, they are suitable for optical tests so that the measured reflectance can be assigned to a known ink coverage. If tests are done only for mechanical and chemical resistance, the user may apply less accurate methods. The preparation of test prints for paste inks (lithography) is described in ISO 2834-1, while screen inks are covered in ISO 2834-3.

In ISO 2834-1, specific operational settings for the “round-to-round” and the “round-to-flat” offset ink printability testers are provided. Laboratory proofers (printability testers) for liquid inks encompass a much wider array of operating processes and associated settings. Therefore, the guidelines included in ISO 2834-2 are more general and will, of necessity, result in more opportunities for operator error in making the test prints.

Graphic technology — Laboratory preparation of test prints —

Part 2: Liquid printing inks

1 Scope

This document specifies a test method for preparation of test prints produced with liquid printing inks, either water-based, solvent-based or radiation cured printing inks as used in flexography and gravure printing. Such test prints are intended to be used for reflection-based measurements, such as colorimetry and optical density as well as for testing light fastness, and the resistance of printing inks to mechanical and chemical attack regarding either printing ink and/or substrate. This document is not applicable to inks for ink jet printing.

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 13655, *Graphic technology — Spectral measurement and colorimetric computation for graphic arts images*

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:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
anilox roller
chromium plated or ceramic roller with evenly distributed small cells generally mounted on a flexographic printing press to control the quantity of ink transferred to the printing forme

3.2
extender
transparent material (varnish or polymer solution) used to reduce the colorant concentration while maintaining viscosity to adapt ink colour concentration to print substrates

3.3
laboratory proofer
printability tester
device for uniformly applying a reproducible amount of ink to a substrate under specified conditions

Note 1 to entry: Earlier editions of this document used the term "printability tester" which is still commonly used in the market.

3.4
flexographic printing forme
cylinder or sleeve covered with a relief type rubber or photopolymer plate for application of *printing ink* (3.6) to print substrate

3.5
gravure printing forme
mechanically engraved, laser-engraved or chemically etched cylinder, sleeve or plate for application of *printing ink* (3.6) to a print substrate

3.6
printing ink
composite material containing colorants, functional components, vehicle and additives

Note 1 to entry: In most cases, it is applied as a fluid to a substrate by a printing process and it is setting or drying by either physical (evaporation) and/or chemical (polymerizations, e.g. oxidation, radiation induced, or other) processes in order to form an image for decorative, informative or technical purposes.

3.7
retarder
additive to reduce the evaporation speed of the solvent in a liquid ink to prevent drying during the application of ink to the substrate

3.8
test-ready ink
printing ink (3.6) of the appropriate composition and viscosity for the purpose of the test

4 Test method

4.1 Principle

Using a laboratory proofer, the gravure or flexographic printing ink is applied consistently and uniformly on the chosen substrate. The ink transfer depends on many aspects of the proofer, the printing forme, the ink and the substrate. For each individual setting, the ink transfer shall be determined according to any method described in 4.4.4. As long as there are no changes in these settings and the printing forms are cleaned thoroughly, the ink transfer is constant.

NOTE 1 Test samples for mechanical and chemical resistance tests can be prepared using any technique resulting in a uniform ink film in a desired thickness range. Ink film thicknesses different from those used in practice will have a strong influence on the results of such tests. These methods are not covered by this document.

NOTE 2 Due to differences between a printing press and a laboratory proofer, prints produced on a laboratory proofer can be different in appearance and in ink film thickness from commercial prints. To reach the same colour strength or print density, different settings from the actual press settings are generally required.

4.2 Apparatus and quality requirements

4.2.1 Apparatus

Any laboratory proofer for liquid printing inks of the type to be tested, liquid printing ink (solvent, water or radiation cured), substrate and drying apparatus may be used as long as the resulting printed