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Graphic technology — Process control for the production of half-tone colour separations, proof and production prints —

Part 4: Publication gravure printing

Technologie graphique — Contrôle des processus de confection de sélections couleurs tramées, d'épreuves et de tirages —

Partie 4: Processus de gravure

Reference number
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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 130, *Graphic technology*.

This second edition cancels and replaces the first edition (ISO 12647-4:2005), which has been technically revised with the following changes:

— deletion of film based requirements;

— changes in proof requirements;

— changes in printing conditions;

— changes in the colouration of the primary and secondary solids;

— general clean up.

ISO 12647 consists of the following parts, under the general title *Graphic technology — Process control for the production of half-tone colour separations, proof and production prints*:

— *Part 1: Parameters and measurement methods*

— *Part 2: Offset lithographic processes*

— *Part 3: Coldset offset lithography on newsprint*

— *Part 4: Publication gravure printing*

— *Part 5: Screen printing*

— *Part 6: Flexographic printing*

— *Part 7: Proofing processes working directly from digital data*

— *Part 8: Validation print processes working directly from digital data*

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Introduction

This part of ISO 12647 lists values or sets of values of the primary process parameters specified in ISO 12647-1 and related technical properties of a gravure publication print. Where deemed useful, secondary parameters are also specified.

The purposes of this part of ISO 12647 are:

— to list and explain the minimum set of primary process parameters required to uniquely define the visual characteristics and related technical properties of a half-tone proof or production print produced from digital data;

— to give the definitions for the general terms necessary for process control;

— to describe the measurement methods and the requirements for reporting the results.

The purpose of a proof print is to simulate the visual characteristics of the finished print product as closely as possible. In order to visually simulate particular print, off-press proofing processes might require values for solid tone coloration and tone value increase which are different from those of the printing process they are meant to simulate. This is caused by differences in phenomena such as gloss, light scatter (within the print substrate or the colorant), metamerism, and transparency. Such differences are likely for those off-press proofing processes in which the print substrate, the colorants, and the technology for applying them are significantly different from gravure publication printing. In such cases, the user or the supplier should ensure that appropriate corrections are specified. Another problem area is the matching of a digital off-press proof to a double-sided print on a less-than-opaque, lightweight printing paper as used in publication gravure printing. If it is deemed necessary, for image quality reasons, to proof with colour management profiles based on measurements with substrate backing rather than black backing, there will be an unavoidable difference between proof and production prints. This fact needs to be communicated to all parties concerned.

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Graphic technology — Process control for the production of half-tone colour separations, proof and production prints —

Part 4: Publication gravure printing

1 Scope

This part of ISO 12647 specifies a number of process parameters and their values to be applied to four-colour publication gravure printing. The parameters and values are chosen in view of the complete process covering the process stages "colour separation", "making of the printing forme", "proof production", and "production printing".

This part of ISO 12647 is applicable,

— directly, to publication gravure printing, including magazines, catalogues, and commercial materials,

— directly, to half-tone and continuous tone proofing processes that predict the colourimetric results of gravure printing, and

— by analogy, to process-colour gravure package printing.

It is not directly applicable to the specifics of the transformations necessary to relate digital input data to the data used to create the cylinder engraving data and/or the proofing process.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8254-1, *Paper and board — Measurement of specular gloss — Part 1: 75 degree gloss with a converging beam, TAPPI method*

ISO 12642-2, *Graphic technology — Input data for characterization of 4-colour process printing — Part 2: Expanded data set*

ISO 12647-1, *Graphic technology — Process control for the production of half-tone colour separations, proof and production prints — Part 1: Parameters and measurement methods*

ISO 12647-7, *Graphic technology — Process control for the production of half-tone colour separations, proof and production prints — Part 7: Proofing processes working directly from digital data*

ISO 13655:2009, *Graphic technology — Spectral measurement and colorimetric computation for graphic arts images*

ISO 15930-4, *Graphic technology — Prepress digital data exchange using PDF — Part 4: Complete exchange of CMYK and spot colour printing data using PDF 1.4 (PDF/X-1a)*

ISO 15930-6, *Graphic technology — Prepress digital data exchange using PDF — Part 6: Complete exchange of printing data suitable for colour-managed workflows using PDF 1.4 (PDF/X-3)*

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ISO 15930-7, *Graphic technology — Prepress digital data exchange using PDF — Part 7: Complete exchange of printing data (PDF/X-4) and partial exchange of printing data with external profile reference (PDF/X-4p) using PDF 1.6*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12647-1 and the following apply.

3.1
improved newsprint
paper with, compared to ordinary newsprint, a higher smoothness, a higher brightness, and a filler content up to 20 %

3.2
engraving pitch
P
reciprocal of average cell spacing on a gravure cylinder, evaluated from the following formula:

$$P = (a \times b)^{-1/2}$$

where

a is the distance between the same points on two adjacent cells in the printing direction;

b is the distance between adjacent circumferential tracks of the engraving stylus.

3.3
solid colour
printed area that corresponds to the maximum cell volume identified for the combination of gravure engraving parameters

4 Requirements

4.1 General

4.2 and 4.3 are based on the assumption that input for gravure printing comprises digital data that defines the data tone values (equivalent to the tone values in offset processes). The specifics of the transformations necessary to relate these data to the data used to create the cylinder engraving data and/or the proofing process are the responsibility of the organization involved and are not specified in this part of ISO 12647.

The substrate categories of gravure printing, identified by the paper principally used, defined for this part of ISO 12647, are as follows:

For Gamut Type 1

— substrate category S1 (coated paper of 70 g/m^2 or greater);

— substrate category S2 (lightweight coated paper);

— substrate category S3 (“combined LWC paper and SC paper”);

NOTE CRPC 5 of ANSI.

— substrate category S4 (super-calendered paper);

— substrate category S5 (improved or enhanced newsprint);

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