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

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

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

*Partie 8: Processus d'impression de maquette couleur produite à  
partir de données numériques*



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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](http://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](http://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](http://www.iso.org/iso/foreword.html).

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

This second edition cancels and replaces the first edition (ISO 12647-8:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

- CIE 1976  $\Delta E^*_{ab}$  has been replaced with modern  $\Delta E_{00}$  colour difference formulae;
- a better metric for uniformity assessment, namely the measurement of 1D distortions of macroscopic uniformity utilizing scanning spectrophotometers, has been added;
- a more content oriented control wedge has been added;
- a new [Annex A](#) has been added to align the content with ISO 12647-7, with respect to substrate categorisation and conformance assessment;
- informative metrics that proved to be not practical, such as tonality, have been deleted.

A list of all parts in the ISO 12647 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](http://www.iso.org/members.html).

## Introduction

This document specifies the properties, and associated test methods, required for digital prints and printing processes to meet the criteria established for “validation prints”.

In most printing workflows, there is a requirement for a visual representation of the expected appearance of the document being printed that can be used as part of the agreement between customer and printer. Where this visual representation is produced such that its characteristics (colour fidelity, tone reproduction, registration, size, etc.) simulate those of the expected printing within tight tolerances, it is usually referred to as a “contract proof”. As the name implies, contract proofs are used as part of the contractual relationship between customer and printer and are used as a visual aim for the press operator during printing as well as the absolute reference against which the finished production is compared. Not unexpectedly, systems that can produce contract proofs are usually expensive and require careful operation and maintenance. ISO 12647-7 specifies the requirements for contract proofs and systems used to produce contract proofs directly from digital data.

Recently, other visualizations of the final printed product have found a place in the printing/proofing workflow because designers and print buyers prefer not to go to the expense of using an ISO 12647-7 compliant contract proof any earlier in the process than necessary. In many situations, participants in the workflow require a hardcopy visual reference of lesser quality than a contract proof. In the past, those prints varied widely in quality and were often referred to as design proofs, concept proofs, layout prints, etc. That quality level is here being referred to as a “validation print”.

Because data are exchanged electronically, and visualizations of those data are produced at multiple sites, there is a requirement for defined requirements for validation prints to allow a degree of consistency throughout the workflow. One of the goals of having less stringent requirements, particularly on colour fidelity, is to allow the production of validation prints on less elaborate and less costly devices than are required for contract proofs. The requirements for validation prints and the systems used to produce validation prints are given in this document.

Validation prints are not intended to replace “contract proofs” for predicting colour on production printing devices. It is expected that the modifications of the requirements for validation prints, along with the requirements for contract proofs, will continue in the future as industry requirements and imaging technologies develop.



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

## Part 8: Validation print processes working directly from digital data

**IMPORTANT** — This document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

### 1 Scope

This document specifies requirements that can be used for determining the conformance of systems that produce a hard-copy validation print, directly from digital data, which is intended to simulate the expected appearance of material printed in accordance with a characterized printing condition.

It is not intended for use in determining the conformance of production printing systems (digital or conventional) since many aspects of production printing are not covered in 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.

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

ISO 2813, *Paints and varnishes — Determination of gloss value at 20°, 60° and 85°*

ISO 3664, *Graphic technology and photography — Viewing conditions*

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

ISO 12040, *Graphic technology — Prints and printing inks — Assessment of light fastness using filtered xenon arc light*

ISO 12640-1, *Graphic technology — Prepress digital data exchange — Part 1: CMYK standard colour image data (CMYK/SCID)*

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 13655:2016, *Graphic technology — Spectral measurement and colorimetric computation for graphic arts images*

ISO 15397:2014, *Graphic technology — Communication of graphic paper properties*

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

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)*

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*

ISO 15930-8, *Graphic technology — Prepress digital data exchange using PDF — Part 8: Partial exchange of printing data using PDF 1.6 (PDF/X-5)*

ISO 15930-9, *Graphic technology — Prepress digital data exchange using PDF — Part 9: Complete exchange of printing data (PDF/X-6) and partial exchange of printing data with external profile reference (PDF/X-6p and PDF/X-6n) using PDF 2.0*

ISO/TS 18621-21, *Graphic technology — Image quality evaluation methods for printed matter — Part 21: Measurement of 1D distortions of macroscopic uniformity utilizing scanning spectrophotometers*

### 3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1

##### **validation print substrate**

substrate used for validation print processes, usually characterized by its light fastness or permanence properties, with only essential requirements dictated by the printing process

#### 3.2

##### **print stabilization period**

time after which the print is chemically and physically stable

Note 1 to entry: It is necessary that this property of the validation print system be specified by the manufacturer. It is most important that the print is stable with respect to colour changes.

#### 3.3

##### **validation print**

print produced directly from digital data early in the production chain following this document, representative of the concept for the final product

Note 1 to entry: A validation print can have reduced accuracy compared to contract proof.

#### 3.4

##### **production substrate**

substrate to be used for production printing, including a substrate originally intended for the validation printing press under test

Note 1 to entry: A production substrate can be a paper with an ink receiving layer or a paper optimized for electrophotographic printing.