

This is a preview of "ISO 12647-7:2016". [Click here to purchase the full version from the ANSI store.](#)

Third edition
2016-11-15

Graphic technology — Process control for the production of halftone colour separations, proof and production prints —

Part 7: Proofing processes working directly from digital data

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

*Partie 7: Processus d'épreuve travaillant directement à partir de
données numériques*



Reference number
ISO 12647-7:2016(E)

© ISO 2016



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

This is a preview of "ISO 12647-7:2016". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Requirements	3
4.1 Colour difference measurements.....	3
4.2 Data files, simulation of screens.....	3
4.2.1 Data delivery.....	3
4.2.2 Screen frequency.....	3
4.2.3 Screen angle.....	3
4.2.4 Dot shape.....	3
4.2.5 Halftone proofs screening.....	3
4.3 Proof print.....	3
4.3.1 General.....	3
4.3.2 Proofing substrate colour and gloss.....	4
4.3.3 Colouration of printed parts.....	4
4.3.4 Gamut.....	5
4.3.5 Permanence of proofing substrate and printed parts.....	5
4.3.6 Repeatability of proof printing.....	6
4.3.7 Colourant rub resistance.....	6
4.3.8 Ink set gloss.....	7
4.3.9 Tone value reproduction limits.....	7
4.3.10 Reproduction of vignettes.....	7
4.3.11 Image register and resolving power.....	7
4.3.12 Margin information.....	7
5 Test methods	8
5.1 Viewing conditions.....	8
5.2 Control strip.....	8
5.3 Additional test objects.....	9
5.3.1 Resolution.....	9
5.3.2 Primary and secondary process colours.....	9
5.3.3 Resolving power.....	9
5.3.4 Uniformity.....	9
5.4 Colour measurement.....	9
5.5 Measurement of gloss.....	10
5.6 Visual appraisal of proof-press-print matches.....	10
Annex A (normative) Technical requirements for proofing conformity	11
Annex B (normative) Rub resistance of the proof colourant	15
Annex C (normative) Outer gamut patches	18
Annex D (informative) Organizational certification routines for visual appraisal of proof-print press-print matches	21
Bibliography	23

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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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

This third edition cancels and replaces the second edition (ISO 12647-7:2013), which has been technically revised with the following changes:

- a number of anomalies identified by industry experts have been addressed;
- substrate selection and measurement specification has been modified to reflect industry practice;
- approximately equivalent CIEDE2000 colour difference values have been added;
- basic support for spot inks has been added;
- wording has been updated to reflect current terminology and industry thinking.

A list of all parts in the ISO 12647 series can be found on the ISO website.

This is a preview of "ISO 12647-7:2016". [Click here to purchase the full version from the ANSI store.](#)

Introduction

ISO 12647-1 serves to provide definitions, the general principles, the general order, the material to be covered in ISO 12647-2 to ISO 12647-8, the definition of the data, the measurement conditions, and the reporting style.

This document relates to the subject of digital proofing and establishes proofing requirements for the most demanding part of the printing and publishing market.

This document specifies aim values (or sets of aim values) and tolerances for the primary parameters specified in ISO 12647-1 for digital proof printing. Primary parameters that define a printing condition include screening parameters (where applicable), the colours of the solids, the colour of the print substrate, colours of intermediate tint values and the tone curve. This document also specifies test methods for those properties of digital proof prints and their substrates that are considered relevant for stable and reliable proofing conditions, and thus for a certification procedure.

The graphic technology industry makes extensive use of proofing to predict the rendering of digital data files by a wide variety of high-definition, high-quality off-press printing processes and applications. Each prediction is based on a characterization data set that defines a particular printing condition.

Typically, the specified printing condition is defined through an International Color Consortium (ICC) profile or the associated characterization data set, both of which relate source data and colorimetric values of the printed colour. Such data may be derived from printing conditions conforming to the pertinent process standard of the ISO 12647 series by industry trade groups or individuals.

The purpose of a proof print is to simulate the visual characteristics of the finished production print product as closely as possible. In order to visually match a particular printing condition, proofing processes require a set of parameters to be specified that are not necessarily identical to those put forward in ISO 12647-1 or another part of ISO 12647. This is caused by differences in colourant spectra or phenomena such as gloss, light scatter (within the print substrate or the colourant), and transparency. In such cases, it is also found that spectrophotometry takes precedence over densitometry.

Another problem area is the matching of a double-sided production print on a lightweight printing substrate, such as often used in heat-set web and publication gravure printing, to a digital proof on a nearly opaque substrate. If the proof was produced using a colour management profile based on measurements with white backing, there will be an unavoidable visual and measurable difference between the proof on the one hand and the production print placed on black on the other hand. A black backing is required for double-sided production printing on non-opaque prints, as specified in the pertinent parts of ISO 12647. The possible occurrence of such differences needs to be well communicated, in advance, to all parties concerned.

Historically, there has been no consistency in the way that either the characterization data or the criteria and limits for a satisfactory match have been provided. This has led to significant redundancy and inconsistencies in the evaluation of proofing systems for different, but similar, applications, and a cost and time burden on the industry. This document therefore attempts to provide guidance in this area by providing specifications and associated testing procedures.

[Annex A](#) summarizes the requirements for the digital proof prints listed in the main body of this document; these are weighted with respect to their relevance in three typical situations:

- requirements with which a proof print, made for a particular printing condition, must comply if it is to be referenced in a contract between the printer and the provider of the digital data (Certified Proof Creation);
- requirements with which a vendor's proofing system, comprising hardware and software, must comply if it is to be considered capable of reliably producing digital contract proofs for a particular printing condition (Certified Proofing System);
- requirements with which a proof print made for a particular printing condition must comply when tested in the field using only a control wedge (Certified Field Proof).

This is a preview of "ISO 12647-7:2016". [Click here to purchase the full version from the ANSI store.](#)

ISO 12647-8 defines requirements for validation prints. Because data are exchanged electronically and visualizations of those data are produced at multiple sites, there is a market need for defined requirements for validation prints to promote a degree of consistency throughout the workflow. Validation prints are intended to be used at early stages of the print production workflow, particularly at the document design stage and have less stringent requirements, particularly on colour fidelity, to allow their production on less elaborate and less costly devices than are required for contract proofs.

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