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## **Imaging materials — Reflection colour photographic prints — Test print construction and measurement**

*Matériaux pour l'image — Réflexion des impressions photographiques  
en couleurs — Mesurage et construction d'une impression d'essai*



Reference number  
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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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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 on 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 42, *Photography*.

This third edition cancels and replaces the second edition (ISO 18944:2014), which has been technically revised.

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

- the document structure has been simplified in order to be better understood by users;
- definitions for measurement condition, colour attributes measured and calculations of colour changes have been included.

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## Introduction

This document is one of a family of International Standards on the physical properties, stability and permanence of imaging materials.

This document provides constraints on factors pertaining to target print preparation and resulting target print measurement which can cause a confounding test-process-induced variation in measured colour values and densities.

The requirements in this document are intended to be used with test methods that produce test data to be shared publicly, with the aim that test results can be duplicated in an alternate test facility.

Topics addressed include:

- digital file preparation;
- digital test file usage;
- target print uniformity;
- printing system configuration and control;
- test print conditioning;
- measurement timing and measurement conditions;
- sRGB encoded patch value for test targets and the corresponding patch selection process;
- densitometric and colorimetric calculations for colour changes.

Test target design and test print preparation are important elements in the characterization of image stability of prints, namely changes in colour attributes such as discoloration of  $D_{\min}$  as well as lightness, hue and chroma changes in colour and neutral patches.

A test target realizes a specific sampling of colours from colour space that is representative for characterization of image stability in the envisaged use case. Other important elements in that characterization process are the definition of colour attributes the changes of which are evaluated and the construction of a metric as well as the choice of the statistical assessment of data analysis, such as choice of average, median or maximum changes of either individual colours or all colours. Unless a psychovisual correlation with observer judgments have been implemented, measured changes have *ad hoc* character.

In this document, the definition and the calculation of changes in colour attributes of colour and neutral patches are expressed in terms of densitometry, whereas discoloration of  $D_{\min}$  is characterized colorimetrically. Changes in colour attributes evaluated with the target and definition of colour attributes in this document are intended to feed an end point system that can be used in image life specification under development in the series of print life specification standards. Previously, the definitions of colour attributes were included in the various test methods which are now consolidated into this document.