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Office equipment — Print quality measurement methods for colour prints —

Part 3: Physical durability measurement methods

Équipements de bureau — Méthodes de mesure de la qualité d'impression en couleurs —

Partie 3: Méthodes de mesure de la durabilité physique

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 28, *Office equipment*.

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Introduction

There is a need for the standardization of measurement methods that quantitatively evaluate the physical durability attributes of duplex print sets, as most office documents are currently printed as duplex print sets comprising several sheets printed with colour images on both sides of substrates.

The measurement methods described in this document are used to assess the physical durability of a print set formed by a printing system on a substrate. When test results are compared among various printing systems, it is important to use the same product of substrates and to set the equivalent printing conditions under default printer settings among the printing systems.

Electrophotography, thermal inkjet or piezoelectric inkjet technologies are commonly used to form such prints. The main purpose of this document is to provide objective measurement methods for physical durability attributes of duplex print sets, however, some attributes are also applicable for a set of simplex prints.

This document specifies the following:

— digital test charts for the measurements;

— measurement methods for the following physical durability attributes:

  — thermal and humidity blocking caused by environmental stress;

  — water resistance;

  — abrasion resistance;

  — scratch resistance.

The above attributes are also applicable for a simplex print set comprising several sheets which are printed colour images on one side of a substrate and no image on the other side. In such case, test parameters are configured to conform with the print set. For example, in thermal and humidity blocking measurement, a print surface of an image area is contacted with an unimaged area of the same paper.

Long term durability affected by light exposure, ozone exposure or thermal storage as described in Annex A is important for long term preservation use cases but not essential for general office use cases.

In this document, colour codes for the test charts are defined in the sRGB colour space specified in IEC 61966-2-1 as is common in office documents, and colour measurements in terms of CIE 1976 L*a*b* (CIELAB) are based on ISO 13655:2017,5.3.

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Office equipment — Print quality measurement methods for colour prints —

Part 3:
Physical durability measurement methods

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

1 Scope

This document specifies test methods as well as test charts for measuring the physical durability attributes of duplex colour prints, typically used in office environment.

This document is applicable to duplex prints comprising several sheets with colour images printed on both sides of a substrate. A multifunction or single function printer is used to form the duplex prints.

This document is intended to be used to evaluate the durability of colour prints under environment and stress conditions assuming general office use, including transportation from the place of printing to where practically used. Permanence and durability in archival and storage environments are out of scope of this document and can be evaluated by the methods in ISO 11798.

The physical durability attributes included are thermal and humidity blocking, water resistance, abrasion resistance and scratch resistance.

All of these attributes are also applicable to a simplex print set comprising several sheets with colour images printed on one side of a substrate and no image on the other side.

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 13655:2017, *Graphic technology — Spectral measurement and colorimetric computation for graphic arts images*

ISO 15184, *Paints and varnishes — Determination of film hardness by pencil test*

ISO 18947-2:2021, *Imaging materials and prints — Abrasion resistance — Part 2: Rub testing of photographic prints*

ISO/IEC 24790:2017, *Information technology — Office equipment — Measurement of image quality attributes for hardcopy output — Monochrome text and graphic images*

IEC 61966-2-1, *Multimedia systems and equipment — Colour measurement and management — Part 2-1: Colour management — Default RGB colour space — sRGB*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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