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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Graphic technology - Measurement and calculation of spot
colour tone value**

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents" drafted.

This document is equivalent to ISO 20654.2017 "Measurement and calculation of color tone values for printing technology".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

This document specifies a new spot color tone value (SCTV) metric for determining the tone value of spot color inks. The specialties in this document

Colors are defined as non-process colors (process colors are CMYK four-color inks). The method is based on the non-printed part of the substrate and the coverage

100% solid ink portion produces approximately uniform tonal visual spacing between portions. This metric is calculated from the measured spectral reflectance

obtained, or calculated from the chromaticity values calculated from the same spectral data.

For a long time, spot colors were managed only by measuring solid ink values, and there was no clear guidance or method for how to measure mid-tone tones.

Law. This is reasonable for prints that contain only spot color solid inks; however, for spot colors with gradient gradations,

When brushing or printing with other inks, a disciplined scheme is needed to manage spot

color gradations. The current solution is to print

Linear scale, and use its value as a reference tone value for calibration. In practice, such operations lead to different results from each printing supplier.

Are not the same.

In the past, spot color gradation has been measured using the standard process tones measurement method, which is based on cyan, magenta, and yellow

Spectral combination obtained from ink optimization, measured under ISO density measurement state. This method is not suitable for mid-tones of spot colors, because in the

In most cases, the generated step scale is far from the uniformity of visual perception. Therefore, it is necessary to find a new measurement method,

Quantifies spot color mid-tones with more uniformity for visual perception.

This document is the result of many people researching and testing a range of alternatives. Especially WiliamB.Birkett,

Measurement and Calculation of Spot Tone Values in Printing Technology

1 Scope

This document presents a metric for evaluating midtones in spot inks. This is used to calculate the spot color tone value (SCTV)

The method produces tone values that are approximately uniformly visually spaced between the substrate and the solid. It can be obtained from solid inks, substrates and one or more

Calculated from a measure of spectral reflectance or chromaticity of the mid-level toner patch.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

ISO 13655 Printing technology Spectral measurement and colorimetric calculation of printed images (Graphicstechnology-Spectralmeasure-

Note. GB/T 19437-2004 Spectral measurement and chromaticity calculation of printed images in printing technology (ISO 13655.1996, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1

colour exchange format colourexchangeformat

A standard that defines a data exchange format for spot color ink characteristics (CxF/X-4).

3.2

spotcolour ink

Inks that do not belong to the process ink group.

Note. Spot color inks are often used to print trademark colors.

[Source. ISO 12647-7, 3.9]

3.3

spotcolortonevalue; SCTV

A value that describes the halftone appearance of non-process inks.

NOTE. All possible series of tonal values between the non-printed portion of the substrate and the fully covered solid portion will yield an approximately uniform vision of the printed tone color

interval. The range of this metric is 0% to 100%, where 0 represents the substrate and 100 represents the spot color solid.

4.1 Spot tone value calculation

This clause defines the Spot Tone Value (SCTV) formula determined by the standard chromaticity variable. The following provides an overview of the spectral reflectance data and

Steps for calculating SCTV from CIELAB values.