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

GB/T 19437-2025

Replacing GB/T 19437-2004

**Graphic technology - Spectral measurement and colorimetric
computation for graphic arts images**

印刷技术 印刷图像的光谱测量和色度计算

(English Translation)

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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 for standardization documents" Drafting.

This document replaces GB/T 19437-2004 "Printing technology - spectral measurement and colorimetric calculation of printed images" and is compatible with GB/T 19437-Compared with 2004, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope of the standard has been changed to apply to spectral measurements and Chromaticity calculation (see Chapter 1, Chapter 1 of the 2004 edition);
- b) Added adaptation to white, calibration, CIELAB chromaticity difference, opacity, opaque substrate, transparent substrate, radiation factor, and classification Terms and definitions such as photometer, spectroradiometer, standardization, and long-range spectroradiometer (see Chapter 3);
- c) Added the provisions for measurement conditions M0, M1, M2 and M3 (see 4.2.2);
- d) Added requirements for data records (see 4.2.5);
- e) Added the conditions, methods and data recording requirements for the measurement of self-luminous displays (spectral radiation) (see 4.4 and 5.2);
- f) The Appendix D of the 2004 edition of the sample backing material has been changed to Appendix A of the sample backing material, which specifies the standard black backing material, standard Methods related to the measurement of quasi-white backing, black/white backing conversion and transparent materials (see Appendix A, Appendix D of the 2004 edition);
- g) The measurement geometry conditions in Appendix E of the 2004 edition have been modified to define the angle, fill, sampling aperture, scanning area in reflection measurement.

Methods and conditions for field and transmission measurements (see Appendix B, Appendix E of the 2004 edition);

- h) The Appendix H of the 2004 edition has been modified to improve the consistency of measurements between instruments, and to make further changes to equipment calibration, measurement conditions, reference materials, etc.

Regulations have been implemented (see Appendix C, Appendix H of the 2004 edition);

- i) Added Appendix D certified reference materials (see Appendix D);
- j) Added Appendix G. Measurement method for UV blocking consistency (see Appendix G);

- k) Added Appendix H Special Cases. Use of Polarization (see Appendix H);
- l) Appendix F Fluorescence Samples has been modified (see Appendix F, Appendix G of the 2004 edition);
- m) Added Appendix I for example calculation of converting spectral measurement values into tristimulus values (see Appendix I);
- n) Added Appendix K CIE DE2000 calculation of total color difference (ΔE_{00}) (see Appendix K);
- o) Added Appendix L on the influence of measurement bandpass on spectral values (see Appendix L).

This document is equivalent to ISO 13655:2017 "Graphic technology - spectral measurement and colorimetric calculation of printed images".

The following minimal editorial changes were made to this document.

- According to usage habits, the standard light source code D50 is changed to D50;
- Remove the superscripts of references in the text.

1 Scope

This document specifies the procedures for measuring and calculating the colorimetry of reflective objects, transmissive objects and self-luminous objects (e.g. flat panel displays).

The printing process includes but is not limited to material preparation and batch production of the printing process, printing Brush processes include offset printing, letterpress printing, flexographic printing, gravure printing, screen printing and digital printing.

This document is not intended for spectral measurements of other specific application requirements, such as those used in the production of printing paper and proofing media materials.

Spectral measurements.

2 Normative references

The contents of the following documents constitute the essential terms of this document through standardized references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

Note: GB/T 11500-2008 Photographic density measurement Part 2: Geometric conditions for perspective density (ISO 5-2:2001, IDT) ISO 5-4:2009 Photography and graphic arts density

measurement Part 4: Geometric conditions for reflection density Note. GB/T 12823.4-2008
Photographic density measurement Part 4: Geometric conditions for reflection density (ISO
5-4:1995, IDT) tions) ISO/CIE11664-1 Colorimetry-Part 1: CIE standard colorimetry observer
ISO/CIE11664-3 Colorimetry-Part 3: CIE tristimulus values ISO/CIE11664-4 Colorimetry-Part 4:
CIE1976L*a*b* Color Space 1976L*a*b* colour space) ISO 28178 Graphic technology uses XML or
ASCII text as an exchange format for color and process control data CIE Publication 15.2004,
Colorimetry, 3rd ed.

CIE Publication 167.2005 Recommended Practice for Tabulating Spectral Data in Color
Calculations (CIE Publication 167.2005, Re-CIE Publication 176.2006 Geometric
Tolerances of Color Measurement