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

GB/T 7975.1-2026

Replacing GB/T 21245-2007

**Paper and board - Determination of color - Diffuse reflectance
method - Part 1: Indoor daylight conditions($C/2^\circ$)
(English Translation)**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 1 of GB/T 7975, "Determination of Color of Paper and Paperboard - Diffuse Reflectance Method". GB/T 7975 has been published.

The following section.

---Part 1: Indoor Daylight Conditions ($C/2^\circ$);

---Part 3: Determination of the color of paper and paperboard ($D50/2^\circ$ diffuse reflectance method).

This document supersedes GB/T 21245-2007 "Determination of color of paper and paperboard ($C/2^\circ$ diffuse reflectance method)" and is consistent with GB/T 21245-2007.

In comparison, aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope has been changed (see Chapter 1, Chapter 1 of the 2007 edition);
- b) Added terms and definitions for illuminant, radiance factor, and internal radiance factor (see 3.1, 3.2, and 3.3);
- c) The definition of the reflection factor has been changed (see 3.4, 3.1 in the 2007 edition);
- d) The instrument requirements have been changed (see Chapter 5, Chapter 5 of the 2007 edition);
- e) Increased instrument calibration requirements (see 8.1);
- f) The instrument precision requirements have been changed (see 8.2, Chapter 8 of the 2007 edition);

- g) Added precision information (see Chapter 11);
- h) The content that should be included in the test report has been changed (see Chapter 12, Chapter 11 of the 2007 edition);
- i) Added spectral characteristics to the filter-type reflectance photometer and a weighting function for the simplified spectrophotometer after bandpass correction (see Appendix A). (Tables A.1, A.2, 3, A.3, and A.4).

This document is modified to adopt ISO 5631-1:2022 "Color of paper and paperboard determined by diffuse reflectance method - Part 1: Indoor daylight conditions".

This document has undergone the following structural adjustments compared to ISO 5631-1:2022.

- a) 5.2.2 corresponds to 5.2.1 in ISO 5631-1:2022, and 5.2.3 corresponds to 5.2.2 in ISO 5631-1:2022;
- b) 8.3 and 8.4 correspond to 8.3 in ISO 5631-1:2022.

The technical differences between this document and ISO 5631-1:2022, and the reasons therefor, are as follows.

- a) The scope has been changed (see Chapter 1) for ease of use;
- b) ISO 2469 (see Chapter 1, 5.1.1, 5.2.2 and 5.3.1) has been replaced with the normatively referenced GB/T 7973-2003 to accommodate [the following].

my country's technological conditions;

- c) ISO 2470-1 (see Chapter 1, 5.1.1, 5.2.3 and 8.1) has been replaced with the normatively referenced GB/T 40277 to adapt to my country's national standards.

Technical conditions;

- d) ISO 186 (see Chapter 6) has been replaced with the normatively referenced GB/T 450 to adapt to my country's technical conditions;
- e) Added terms and definitions for illuminators (see 3.1) for better understanding;
- f) The calculation method for CIE tristimulus values has been changed (if the instrument's bandpass is equal to or less than 5 nm) to adapt to my country's technical conditions.

(See 9.1).

The following editorial changes have been made to this document.

- a) The standard title has been revised to "Determination of Color of Paper and Paperboard - Diffuse Reflectance Method - Part 1: Indoor Daylight Conditions (C/2°)";
- b) The URL for the ISO and IEC standardization terminology database in Chapter 3 of ISO

5631-1:2022 has been removed;

c) The suspension section of ISO 5631-1:2022 has been deleted;

d) The note in Chapter 10 has been deleted.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China National Light Industry Council.

This document is under the jurisdiction of the National Technical Committee on Standardization of Paper Industry (SAC/TC141).

Introduction

Color is one of the important optical indicators of paper and paperboard. The measurement results will also be different when tested under different standard light source conditions.

GB/T 7975, "Determination of Color of Paper and Paperboard - Diffuse Reflectance Method," specifies the method for determining the diffuse reflectance of the color of paper and paperboard. It is proposed that...

It consists of 3 parts.

---Part 1: Indoor Daylight Conditions ($C/2^\circ$). The aim is to determine the observer conditions at CIE illuminator C and CIE 1931 (2°).

Determination of the color of paper and cardboard.

---Part 2: Outdoor Daylight Conditions ($D65/10^\circ$). The purpose is to determine the appropriate lighting conditions for CIE illuminators with a D65 illuminator and CIE 1964 (10°).

Determination of the color of paper and paperboard under observer conditions.

---Part 3: Indoor Lighting Conditions ($D50/2^\circ$). The purpose is to determine the lighting conditions for CIE luminaires with D50 light sources and CIE 1931 (2°) viewing angles.

Determination of the color of paper and paperboard under observer conditions.

Diffuse reflectance method for determining the color of paper and paperboard Part 1: Indoor Daylight Conditions ($C/2^\circ$)

1 Scope

This document describes a method for determining the color of paper and paperboard using a diffuse reflectance method that eliminates specular gloss.

This document applies to the determination of color in most types of paper and paperboard.

This document does not apply to colored paper or paperboard containing fluorescent dyes or pigments. If using paper or paperboard conforming to GB/T 7973-2003...

The fluorescence reference standard required by the Level III reference standard, and the fluorescence reference standard is provided by an authorized laboratory as specified in GB/T 40277.

The specified ISO luminance value is used to adjust the ultraviolet (UV) content irradiated onto the sample to be consistent with the CIE illuminator C. This document can be used for measurement.

Colored paper or paperboard containing fluorescent whitening agents.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

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

This document.

GB/T 450 Paper and paperboard specimen collection and determination of longitudinal and transverse directions, front and back sides of specimens (GB/T 450-2008, ISO 186.

2002, MOD)

GB/T 3977 Methods of Representing Colors GB/T 7973-2003 Determination of diffuse reflectance factor of paper, paperboard and pulp (diffuse/vertical method) (ISO 2469:1994,NEQ) GB/T 40277 Determination of blue diffuse reflectance factor (ISO luminance) of paper, paperboard and pulp under indoor daylight conditions (GB/T 40277-2021, ISO 2470-1:2016, MOD)

3 Terms and Definitions

The following terms and definitions apply to this document.

illuminant

Radiation with a defined relative spectral power distribution across the entire wavelength range that affects the perception of an object's color.

[Source. GB/T 41434-2022, 3.10] 3.2 radiance factor the radiance of an object's surface element in the direction defined by a specified cone (whose vertex is located at the surface element) is the same as that of perfect reflection and diffuse reflection under the same illumination conditions.