INTERNATIONAL STANDARD

ISO 2470-1

Second edition
2016-09-15

Paper, board and pulps — Measurement of diffuse blue reflectance factor —

Part 1: Indoor daylight conditions (ISO brightness)

Papier, carton et pâtes — Mesurage du facteur de réflectance diffuse dans le bleu —

Partie 1: Conditions d'éclairage intérieur de jour (degré de blancheur ISO)

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Reference number
ISO 2470-1:2016(E)

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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).

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).

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 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.

The committee responsible for this document is ISO/TC 6, *Paper, board and pulps*.

This second edition cancels and replaces the first edition (ISO 2470-1:2009), of which it constitutes a minor revision including the following modifications:

— references in Clause 2 and in the Bibliography have been updated;

— the terminology (Clause 3) has been revised to be consistent with the information provided in ISO/TR 10688 and, wherever possible, with the symbols used in the CIE International Lighting Vocabulary;

— references to "ISO/TC 6 authorized laboratories" have been eliminated;

— the precision statement has been moved to an informative annex (Annex C).

ISO 2470 consists of the following parts, under the general title *Paper, board and pulps — Measurement of diffuse blue reflectance factor*:

— *Part 1: Indoor daylight conditions (ISO brightness)*

— *Part 2: Outdoor daylight conditions (D65 brightness)*

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Introduction

The diffuse reflectance factor (radiance factor) depends on the conditions of measurement, particularly the spectral and geometric characteristics of the instrument used. This part of ISO 2470 is therefore intended to be read in conjunction with ISO 2469 which defines the geometric characteristics of the instrument and also defines the photometric calibration procedure to be adopted.

The definition of ISO brightness is historically linked to the Zeiss Elrepho instrument having, as a light source, an incandescent lamp which excites fluorescence to only a limited extent. It is specified here that, in instruments of the abridged spectrophotometer or filter colorimeter type, the UV content of the illumination be adjusted to conform to the CIE illuminant C as defined by a fluorescent reference standard having an assigned value of ISO brightness as described in Annex B. Only if this is done can the property measured on a fluorescent material be called ISO brightness.

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Paper, board and pulps — Measurement of diffuse blue reflectance factor —

Part 1: Indoor daylight conditions (ISO brightness)

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1 Scope

This part of ISO 2470 specifies a method for measuring the diffuse blue reflectance factor (ISO brightness) of pulps, papers and boards.

This part of ISO 2470 is limited in its scope to white and near-white pulps, papers and boards. The measurement can only be made in an instrument in which the ultraviolet energy level of the illumination has been adjusted to correspond to the CIE illuminant C[6] using a fluorescent reference standard. The CIE illuminant C is taken to be representative of indoor daylight conditions because it contains a suitable proportion of UV radiation.[9]

NOTE The property called D65 brightness is measured with an instrument adjusted to correspond with CIE standard illuminant D65,[4] which has a much higher UV content than that specified in this part of ISO 2470. The measurement of D65 brightness is described in ISO 2470-2.[2]

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 186, *Paper and board — Sampling to determine average quality*

ISO 2469, *Paper, board and pulps — Measurement of diffuse radiance factor (diffuse reflectance factor)*

ISO 3688, *Pulps — Preparation of laboratory sheets for the measurement of diffuse blue reflectance factor (ISO brightness)*

ISO 4094, *Paper, board and pulps — International calibration of testing apparatus — Nomination and acceptance of standardizing and authorized laboratories*

ISO 7213, *Pulps — Sampling for testing*

3 Terms and definitions

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

3.1
diffuse radiance factor
β
ratio of the diffusely reflected radiance of a body in a given direction to that of the perfect reflecting diffuser under specified conditions of irradiation

Note 1 to entry: For fluorescent (luminescent) materials, the specified conditions of irradiation in this part of ISO 2470 are CIE illuminant C and the diffuse radiance factor is strictly the total radiance factor, β, which is the sum of two components, the reflected radiance factor, β_R, and the luminescent radiance factor, β_L, so that:

$$\beta = \beta_R + \beta_L$$

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