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**Paper and board — Determination of  
colour by diffuse reflectance —**

**Part 1:  
Indoor daylight conditions (C/2°)**

*Papier et carton — Détermination de la couleur par réflectance  
diffuse —*

*Partie 1: Conditions d'éclairage intérieur de jour (C/2°)*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 5631-1 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*.

This first edition of ISO 5631-1 cancels and replaces ISO 5631:2000, which has been technically revised.

ISO 5631 consists of the following parts, under the general title *Paper and board — Determination of colour by diffuse reflectance*:

- *Part 1: Indoor daylight conditions (C/2°)*
- *Part 2: Outdoor daylight conditions (D65/10°)*
- *Part 3: Indoor illumination conditions (D50/2°)*

## Introduction

The colour of an object can be uniquely characterized by means of a triplet of colour coordinates such as the 1964 CIE tristimulus values or the CIELAB 1976  $L^*$ ,  $a^*$ ,  $b^*$  coordinates.

Apart from the optical properties of the sample, the values of such coordinates depend upon the conditions of measurement, particularly the spectral and geometric characteristics of the instrument used. This part of ISO 5631 should therefore be read in conjunction with ISO 2469.

This part of ISO 5631 describes the measurement and description of colour in terms of the CIE illuminant C and the CIE 1931 (2°) standard observer. The other parts of this International Standard describe measurements and calculations carried out in an analogous manner using either the CIE standard illuminant D65 and the CIE 1964 (10°) standard observer or the CIE illuminant D50 and the CIE 1931 (2°) standard observer.

The choice of illuminant conditions is important when determining the colour coordinates of white papers containing a fluorescent whitening agent. In ISO 5631-2, the UV content of the illumination is much higher, approximating UV levels encountered in outdoor viewing conditions.

ISO 5631-3 describes the measurement and description of colour in terms of the CIE standard illuminant D50 and the CIE 1931 (2°) standard observer. This method is especially applicable to graphic arts situations since these illuminant/observer conditions are used within the graphic arts industry.

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# Paper and board — Determination of colour by diffuse reflectance —

## Part 1: Indoor daylight conditions (C/2°)

### 1 Scope

This part of ISO 5631 specifies a method for measuring the colour of paper and board by the diffuse reflectance method with the elimination of specular gloss.

This part of ISO 5631 is not applicable to coloured papers or boards which incorporate fluorescent dyes or pigments. It may be used to determine the colour of papers or boards which contain fluorescent whitening agents provided the UV content of the illumination on the test piece has been adjusted to conform to that in the CIE illuminant C, using a fluorescent reference standard provided by an ISO/TC 6 authorized laboratory, as described in ISO 2470-1.

### 2 Normative references

The following referenced documents are indispensable for the application 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 186, *Paper and board — Sampling to determine average quality*

ISO 2469:2007, *Paper, board and pulps — Measurement of diffuse radiance factor*

ISO 2470-1, *Paper, board and pulps — Measurement of diffuse blue reflectance factor — Part 1: Indoor daylight conditions (ISO brightness)*

CIE Publication 15:2004, *Colorimetry*, 3rd ed.

ASTM E308-06, *Standard Practice for Computing the Colors of Objects by Using the CIE System*