INTERNATIONAL STANDARD

ISO 2471

Third edition
1998-02-15

Paper and board — Determination of opacity (paper backing) — Diffuse reflectance method

Papier et carton — Détermination de l'opacité sur fond papier — Méthode de réflexion en lumière diffuse

Reference number
ISO 2471:1998(E)

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.

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.

International Standard ISO 2471 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*.

This third edition cancels and replaces the second edition (ISO 2471:1977), of which it constitutes a technical revision.

Annex A forms an integral part of this International Standard. Annex B is for information only.

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet central@iso.ch
X.400 c=ch; a=400net; p=iso; o=isocs; s=central

Printed in Switzerland

Introduction

The opacity value depends on the principle used for its evaluation, and a method should be chosen which most closely relates to the interpretation to be placed upon the results. The method described in this International Standard is applicable when it is desired to measure that property of a paper which governs the extent to which one sheet visually obscures printed matter on underlying sheets of similar paper. It should not be confused with methods based on the reduction in a standard contrast by interposition of the paper, opacity (white backing) formerly known as contrast ratio, nor with the assessment of the amount and condition of light penetrating a sheet (transparency or translucency).

The calculation of opacity requires luminous-reflectance-factor data obtained by measurement under specified conditions. The reflectance factor depends on the conditions of measurement and particularly on the spectral and geometric characteristics of the instrument used for its determination. This International Standard should therefore be read in conjunction with ISO 2469.

Paper and board — Determination of opacity (paper backing) — Diffuse reflectance method

1 Scope

This International Standard specifies a method for the determination of the opacity (paper backing) of paper by diffuse reflectance.

It is restricted to white and near-white papers (and boards). Paper or board that has been treated with a fluorescent dyestuff or exhibits significant fluorescence may be measured, but the agreement between values obtained with different instruments may be unsatisfactory and there may be difficulty in assessing the meaning of results.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 186:1994, *Paper and board — Sampling to determine average quality.*

ISO 2469:1994, *Paper, board and pulps — Measurement of diffuse reflectance factor.*

ASTM E 308-96, *Computing the Colors of Objects by Using the CIE System.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 reflectance factor, R**:** The ratio, expressed as a percentage, of the radiation reflected by a body to that reflected by the perfect reflecting diffuser under the same conditions.

3.2 luminous reflectance factor, R_y**:** The reflectance factor defined with reference to the CIE illuminant C and the CIE 1931 colour matching function $\bar{y}(\lambda)$, and corresponding to the attribute of visual perception of the reflecting surface.