
**Paper, board and pulps — Measurement
of diffuse blue reflectance factor
(ISO brightness)**

*Papier, carton et pâtes — Mesurage du facteur de réflectance diffuse dans
le bleu (degré de blancheur ISO)*



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 3.

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 2470 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, Working Group WG 3, *Optical properties*.

This third edition cancels and replaces the second edition (ISO 2470:1977). This edition differs from the 1977 edition in that it describes the use of abridged spectrophotometers and also prescribes a routine for adjusting the relative UV-content of the illumination in this type of instrument to a defined level when materials containing fluorescent whitening agents are to be measured.

Annexes A and B form a normative part of this International Standard.

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International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet iso@iso.ch

Printed in Switzerland

Introduction

The reflectance factor depends on the conditions of measurement, particularly the spectral and geometric characteristics of the instrument used. This International Standard should therefore be read in conjunction with ISO 2469 which defines the geometric characteristics of the instrument and the calibration procedure. This edition of ISO 2470 differs from the 1977 edition in that it describes the use of abridged spectrophotometers and also prescribes a routine for adjusting the relative UV-content of the illumination in this type of instrument to a defined level when materials containing fluorescent whitening agents are to be measured.

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 type, the UV-content of the illumination be adjusted using a suitable filter 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 may the property measured on a fluorescent material be called ISO brightness.

Paper, board and pulps — Measurement of diffuse blue reflectance factor (ISO brightness)

1 Scope

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

This International Standard is limited in its scope to white and near-white pulps, papers and boards. Materials exhibiting fluorescence which promotes the appearance of whiteness may be measured but the ultraviolet energy level of the illumination must be adjusted using a fluorescent calibration standard if standardization and agreement between instruments is to be achieved.

NOTE A brightness value associated with an instrument setting adjusted to conform to the CIE standard illuminant D65 (cf. ISO 11475^[1]), which has a much higher UV-content than the CIE illuminant C specified in this International Standard, is outside the scope of this International Standard and consequently is not "ISO brightness". Such a property may be called "D65 brightness".

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

ISO 2469, *Paper, board and pulps — Measurement of 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 International Standard, the following terms and definitions apply.

3.1

reflectance factor

R

ratio, expressed as a percentage, of the radiation reflected by a body to that reflected by the perfect reflecting diffuser under the same conditions