



SLOVENSKI STANDARD
oSIST prEN ISO 12625-16:2023
01-julij-2023

Tissue papir in proizvodi iz tissue papirja - 16. del: Ugotavljanje optičnih lastnosti - Opaciteta (papirna podlaga) - Metoda razpršene odsevnosti (ISO/DIS 12625-16:2023)

Tissue paper and tissue products - Part 16: Determination of optical properties - Opacity (paper backing) - Diffuse reflectance method (ISO/DIS 12625-16:2023)

Tissue-Papier und Tissue-Produkte - Teil 16: Bestimmung der optischen Eigenschaften - Opazität über Papierstapel - Diffuser Reflexionsfaktor (ISO/DIS 12625-16:2023)

Papier tissue et produits tissue - Partie 16: Détermination des propriétés optiques - Opacité sur fond papier - Méthode par réflectance diffuse (ISO/DIS 12625-16:2023)

Ta slovenski standard je istoveten z: prEN ISO 12625-16

ICS:

85.080.20 Tissue papir Tissue paper

oSIST prEN ISO 12625-16:2023 en,fr,de

DRAFT INTERNATIONAL STANDARD

ISO/DIS 12625-16

ISO/TC 6/SC 2

Secretariat: SIS

Voting begins on:
2023-05-24Voting terminates on:
2023-08-16

Tissue paper and tissue products —

Part 16:

Determination of optical properties — Opacity (paper backing) — Diffuse reflectance method

*Papier tissue et produits tissue —**Partie 16: Détermination des propriétés optiques — Opacité sur fond papier — Méthode par réflexion en lumière diffuse*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ICS: 85.080.20

[oSIST prEN ISO 12625-16:2023](https://standards.iteh.ai/catalog/standards/sist/55b5da03-8e74-41c9-940e-13185cfa1787/osist-pren-iso-12625-16-2023)<https://standards.iteh.ai/catalog/standards/sist/55b5da03-8e74-41c9-940e-13185cfa1787/osist-pren-iso-12625-16-2023>

This document is circulated as received from the committee secretariat.

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

ISO/CEN PARALLEL PROCESSING



Reference number
ISO/DIS 12625-16:2023(E)

© ISO 2023

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN ISO 12625-16:2023](https://standards.iteh.ai/catalog/standards/sist/55b5da03-8e74-41c9-940e-13185cfa1787/osist-pren-iso-12625-16-2023)

<https://standards.iteh.ai/catalog/standards/sist/55b5da03-8e74-41c9-940e-13185cfa1787/osist-pren-iso-12625-16-2023>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Principle.....	3
5 Apparatus.....	3
5.1 Reflectometer.....	3
5.2 Reference standards.....	3
5.3 Working standards.....	3
5.4 Black cavity.....	3
6 Sampling.....	4
7 Conditioning.....	4
8 Preparation of test pieces.....	4
9 Procedure.....	4
10 Calculation.....	5
11 Test report.....	5
Annex A (normative) Spectral characteristics of reflectometers for measuring luminous factor.....	6
Annex B (informative) Precision.....	10
Bibliography.....	12

ISO/DIS 12625-16:2023(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.

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 of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, Subcommittee SC 2, *Test methods and quality specifications for paper and board*.

This second edition cancels and replaces the first edition (ISO 12625-16:2015), which has been technically revised.

The main changes compared to the previous edition are as follows:

- [Annex A](#) to include information and Table A.2 for instruments with bandpass correction.

A list of all parts in the ISO 12625 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Optical measurements are affected by the geometry of the instruments used and by the texture of the material. The design of the instrument to be used according to this part of ISO 12625, and the routine to be adopted for its calibration are specified in ISO 2469.

The optical properties are related to the visual appearance of the material. Although optical properties are intrinsic properties of tissue paper, they are not functional properties.

The opacity value depends on the principle used for its evaluation, and a method is to be chosen which most closely relates to the interpretation to be placed upon the results. The method described in this part of ISO 12625 is applicable when it is desired to measure that property of a tissue paper or tissue product which governs the extent to which one sheet visually obscures print on underlying sheets. It is not to 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 luminance-factor data obtained by measurement under specified conditions. The luminance factor depends on the conditions of measurement, and particularly on the spectral and geometric characteristics of the instrument used for its determination. This part of ISO 12625 is to be read in conjunction with ISO 2469.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN ISO 12625-16:2023](https://standards.iteh.ai/catalog/standards/sist/55b5da03-8e74-41c9-940e-13185cfa1787/osist-pren-iso-12625-16-2023)

<https://standards.iteh.ai/catalog/standards/sist/55b5da03-8e74-41c9-940e-13185cfa1787/osist-pren-iso-12625-16-2023>

Tissue paper and tissue products —

Part 16:

Determination of optical properties — Opacity (paper backing) — Diffuse reflectance method

1 Scope

This part of ISO 12625 specifies the testing procedures for the instrumental determination of the opacity of tissue paper or tissue products by diffuse reflectance using a paper backing.

This part of ISO 12625 contains specific instructions for the preparation of test pieces of single-ply and multi-ply products, where special preparation/procedures might be necessary.

It can be used to determine the opacity of tissue paper and tissue products containing fluorescent whitening agents, provided the UV content of the radiation incident on the test piece has been adjusted to conform to that in the CIE illuminant C using a fluorescent reference standard provided by an authorized laboratory as described in ISO 2470-1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 187, *Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

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

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

ISO 2471, *Paper and board — Determination of opacity (paper backing) — Diffuse reflectance method*

ISO 4094, *Paper, board and pulps — General requirements for the competence of laboratories authorized for the issue of optical reference transfer standards of level 3*

ISO/CIE 11664-2, *Colorimetry — Part 2: CIE standard illuminants*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

ISO/DIS 12625-16:2023(E)

3.1 reflectance factor

R

ratio of the radiation reflected by a surface element of a body in the direction delimited by a given cone with its apex at the surface element to that reflected by the perfect reflecting diffuser under the same conditions of illumination

Note 1 to entry: The ratio is often expressed as a percentage.

Note 2 to entry: This term may be used only when it is known that the test material exhibits no luminescence (fluorescence).

[SOURCE: ISO 2469:2014]

Note 3 to entry: The reflectance factor is influenced by the backing if the body is translucent.

[SOURCE: ISO 2471:2008]

3.2 luminance factor (C) luminous reflectance factor $Y(C/2^\circ)$ -value

R_y

reflectance factor (3.1) or radiance factor defined with reference to the CIE illuminant C and the visual efficiency function $V(\lambda)$

Note 1 to entry: The visual efficiency function describes the sensitivity of the eye to light, so that the luminance factor (C) corresponds to the attribute of visual perception of the reflecting surface.

Note 2 to entry: For computational purposes, the function is identical with the CIE 1931 colour-matching function $\bar{y}(\lambda)$

Note 3 to entry: The luminance factor (C) is also known as the $Y(C/2^\circ)$ -value. In previous editions of this International Standard, it was referred to as the luminous reflectance factor.

[SOURCE: ISO 2471:2008]

3.3 single-sheet luminance factor (C)

$R_{y,0}$

luminance factor (C) (3.2) of a single sheet of paper with a black cavity as backing

[SOURCE: ISO 2471:2008]

3.4 intrinsic luminance factor (C)

$R_{y,\infty}$

luminance factor (C) (3.2) of a layer or pad of material thick enough to be opaque, i.e. such that increasing the thickness of the pad by doubling the number of sheets results in no change in the measured reflectance factor (3.1)

[SOURCE: ISO 2471:2008]

3.5 opacity (paper backing)

ratio of the single-sheet luminance factor (C) (3.3), $R_{y,0}$, to the intrinsic luminance factor (C) (3.4), $R_{y,\infty}$, of the same sample

Note 1 to entry: Opacity is expressed as a percentage.

[SOURCE: ISO 2471:2008]

4 Principle

The luminance factor of a single sheet of the tissue paper or tissue product over a black cavity and the intrinsic luminance factor of the tissue paper or tissue product are determined. The opacity is calculated as the ratio of these two luminance factor values.

5 Apparatus

5.1 Reflectometer

5.1.1 Reflectometer, having the geometric, spectral and photometric characteristics described in ISO 2469, calibrated in accordance with the provisions of ISO 2469 and equipped for the measurement of luminance factor (C).

The materials to be measured can contain fluorescent whitening agents. The reflectometer shall therefore be equipped with a radiation source adjusted to correspond to the CIE illuminant C, described in ISO 11664-2. This should be achieved through the use of a fluorescent reference standard (5.2.2) as described in ISO 2470-1.

5.1.2 In the case of a **filter reflectometer**, a **filter** that, in conjunction with the optical characteristics of the basic instrument, gives an overall response equivalent to the CIE tristimulus value Y , described in ISO 11664-1,^[2] of the CIE 1931 standard colourimetric system of the test piece evaluated for the CIE illuminant C.

5.1.3 In the case of an **abridged spectrophotometer**, a **function** that permits calculation of the CIE tristimulus value Y , described in 11664-1,^[2] of the CIE 1931 standard colourimetric system of the test piece, evaluated for the CIE illuminant C using the weighting functions given in [Annex A](#).

5.2 Reference standards

The reference standards for calibrating the instrument and the working standards should be used with sufficient regularity to ensure satisfactory performance.

5.2.1 Non-fluorescent reference standard, for photometric calibration, issued by an ISO 4094 authorized laboratory in accordance with the provisions of ISO 2469.

5.2.2 Fluorescent reference standard, for use in adjusting the UV content of the radiation incident upon the sample in order to adjust the UV setting of the instrument to conform to UV(C) conditions, as described in ISO 2470-1.

5.3 Working standards

5.3.1 Two plates, of flat opal glass, ceramic, or other suitable material, cleaned and calibrated as described in ISO 2469.

NOTE In some instruments, the function of the primary working standard can be fulfilled by a built-in internal standard.

5.4 Black cavity

The black cavity should have a reflectance factor which does not differ from its nominal value by more than 0,2 %, at all wavelengths. The black cavity should be stored upside down in a dust-free environment or with a protective cover.

NOTE 1 The condition of the black cavity can be checked by reference to the instrument manufacturer.