



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 12625-16:2015

Tissue paper and tissue products - Part 16:  
Determination of optical properties - Opacity  
(paper backing) - Diffuse reflectance method  
(ISO 12625-16:2015)

## I.S. EN ISO 12625-16:2015

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EUROPEAN STANDARD

**EN ISO 12625-16**

NORME EUROPÉENNE

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English Version

**Tissue paper and tissue products - Part 16: Determination of optical properties - Opacity (paper backing) - Diffuse reflectance method (ISO 12625-16:2015)**

Papier tissue et produits tissue - Partie 16: Détermination des propriétés optiques - Opacité sur fond papier - Méthode par réflexion en lumière diffuse (ISO 12625-16:2015)

Tissue-Papier und Tissue-Produkte - Teil 16: Bestimmung der optischen Eigenschaften - Opazität über Papierstapel - Diffuser Reflexionsfaktor (ISO 12625-16:2015)

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**EN ISO 12625-16:2015 (E)**

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## **Foreword**

This document (EN ISO 12625-16:2015) has been prepared by Technical Committee ISO/TC 6 “Paper, board and pulps” in collaboration with Technical Committee CEN/TC 172 “Pulp, paper and board” the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2015, and conflicting national standards shall be withdrawn at the latest by August 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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### **Endorsement notice**

The text of ISO 12625-16:2015 has been approved by CEN as EN ISO 12625-16:2015 without any modification.

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**ISO  
12625-16**

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**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*



Reference number  
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**ISO 12625-16:2015(E)**



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## ISO 12625-16:2015(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](http://www.iso.org/directives)).

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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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

ISO 12625-16 was prepared by European Committee for Standardization (CEN) Technical Committee CEN/TC 172 *Pulp, paper and board*, in collaboration with Technical Committee ISO/TC 6, *Paper, board and pulps*, Subcommittee SC 2, *Test methods for quality specifications for paper and board*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO 12625 consists of the following parts, under the general title *Tissue paper and tissue products*:

- *Part 1: General guidance on terms*
- *Part 3: Determination of thickness, bulking thickness and apparent bulk density and bulk*
- *Part 4: Determination of tensile strength, stretch at break and tensile energy absorption*
- *Part 5: Determination of wet tensile strength*
- *Part 6: Determination of grammage*
- *Part 7: Determination of optical properties — Measurement of brightness and colour with D65/10° (outdoor daylight)*
- *Part 8: Water-absorption time and water-absorption capacity, basket-immersion test method*
- *Part 9: Determination of ball burst strength*
- *Part 11: Determination of wet ball burst strength*
- *Part 12: Determination of tensile strength of perforated lines — Calculation of perforation efficiency*
- *Part 15: Determination of optical properties — Measurement of brightness and colour with C/2° (indoor daylight)*
- *Part 16: Determination of optical properties — Opacity (paper backing) — Diffuse reflectance method*

## **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.



# **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.

This part of ISO 12625 is not applicable to coloured tissue paper and tissue products which incorporate fluorescent dyes or pigments.

## **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 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*

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

## **3 Terms and definitions**

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

### **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 irradiation

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

Note 2 to entry: The reflectance factor is influenced by the backing if the body is translucent.

[SOURCE: ISO 2471:2008]

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