SLOVENSKI STANDARD
oSIST prEN ISO 12625-15:2022

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Tissue papir in proizvodi iz tissue papirja - 15. del: Ugotavljanje optičnih lastnosti - Merjenje beline in barve s svetilom C/2° (osvetlitev v prostoru) (ISO/DIS 12625-15:2022)

Tissue paper and tissue products - Part 15: Determination of optical properties - Measurement of brightness and colour with C/2° (indoor daylight) illuminant (ISO/DIS 12625-15:2022)

Tissue-Papier und Tissue-Produkte – Teil15: Bestimmung von optischen Eigenschaften – Messung von Brightness und Farbe unter LichtartC/2° (Tageslichtbedingungen in Innenräumen) (ISO/DIS 12625-15:2022)

Papier tissue et produits tissue - Partie 15: Détermination des propriétés optiques - Mesurage du degré de blancheur et de la couleur avec l'illuminant C/2° (lumière du jour à l'intérieur) (ISO/DIS 12625-15:2022)

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ICS:

85.080.20	Tissue papir	Tissue paper

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Tissue paper and tissue products —

Part 15:
Determination of optical properties — Measurement of brightness and colour with C/2° (indoor daylight) illuminant

Papier tissue et produits tissue —

Partie 15: Détermination des propriétés optiques — Mesurage du degré de blancheur et de la couleur avec l'illuminant C/2° (lumière du jour à l'intérieur)

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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.

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 12625-15:2015), which has been technically revised.

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

— removing alternative equations in clause 11.2.1 because they are not relevant for tissue paper.

— updated tables in Annex A to include L*, a*, b* data to 0,01 and correct errors in the tables

— changing C/2° Brightness to ISO Brightness

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

Brightness and colour measurement may be performed under various illumination and observation conditions. This part of ISO 12625 deals with C/2° conditions, which refer to an indoor daylight.

D65/10° conditions (outdoor daylight) are considered in ISO 12625-7. Although both standards deal with brightness and colour, results obtained are usually different and do not correlate.

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 and ISO 2470-1.

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

Brightness is not to be confused with the optical property called CIE-whiteness, which is based on reflectance data obtained over the full visible spectral range (VIS). In contrast, brightness is limited to the blue region of VIS (visible spectrum).

As preferences for the properties to be specified can vary by country/market, three different test methods for the determination of optical properties were developed:

a) Part 7: Determination of optical properties — Measurement of brightness and colour with D65/10° (outdoor daylight);

b) Part 15: Determination of optical properties — Measurement of brightness and colour with C/2° (indoor daylight);

c) Part 16: Determination of optical properties — Measurement of opacity (paper backing) — Diffuse reflectance method.

Tissue paper and tissue products —

Part 15:
Determination of optical properties — Measurement of brightness and colour with C/2° (indoor daylight) illuminant

1 Scope

This part of ISO 12625 specifies testing procedures for the instrumental determination of brightness and colour of tissue paper and tissue products viewed in indoor daylight conditions. It also gives specific instructions for the preparation of test pieces (single-ply, multi-ply products) and for the optical measurements of products, where special precautions may be necessary.

NOTE The properties called D65 brightness and colour are measured with an instrument adjusted to a much higher UV content than that specified in this part of ISO 12625. The measurements of D65 brightness and colour are described in ISO 12625-7.

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 2470-1:2016, *Paper, board and pulps — Measurement of diffuse blue reflectance factor — Part 1: Indoor daylight conditions (ISO brightness)*

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 5631-1:2015, *Paper and board — Determination of colour by diffuse reflectance — Part 1: Indoor daylight conditions (C/2 degrees)*

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/

3.1
diffuse radiance factor
R
ratio of the radiation reflected and emitted from a body to that reflected from the perfect reflecting diffuser under the same conditions of diffuse illumination and normal detection

Note 1 to entry: The reflectance factor is expressed as a percentage.

[SOURCE: ISO 2469:2014, definition 3.2]

3.2
intrinsic diffuse radiance factor
R_∞
diffuse radiance factor 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 radiance factor

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

Note 2 to entry: The radiance factor of a single non-opaque sheet is dependent on the background and is not a material property.

[SOURCE: ISO 2469:2014, definition 3.3]

3.3
reflectance factor
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, definition 3.4]

3.4
ISO brightness
intrinsic reflectance factor measured with a reflectometer having the characteristics described in ISO 2469, equipped with a filter or corresponding function having an effective wavelength of 457 nm (and a half bandwidth of 44 nm, and adjusted so that the UV content of the irradiation incident upon the test piece corresponds to that of the CIE illuminant C

Note 1 to entry: The filter function is described more fully by the weighing function factors given in ISO 2470-1.

3.5
tristimulus values
X, Y, Z
amount of the three reference colour stimuli, in a given chromatic system, required to match the stimulus considered

Note 1 to entry: In this part of 12625 as in ISO 5631-1, the CIE illuminant C and the CIE 1931 (2°) standard observer are used to define the trichromatic system.

Note 2 to entry: No subscript is applied to conform to the CIE convention that tristimulus values have no subscript when the CIE 1931 (2°) standard observer is used [the subscript 10 is applied for tristimulus values that are obtained using the CIE 1964 (10°) standard observer].

[SOURCE: ISO 5631-1:2015]