AS/NZS 1301.455:2014
ISO 5631-2:2008

AS/NZS 1301.455:2014

Australian/New Zealand Standard™

Methods of test for pulp and paper

Method 455: Determination of colour by diffuse reflectance—Outdoor daylight conditions (D65/10°)

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The following are represented on Committee PK-019:

Appita
Australian Forest Products Association
Australian Institute of Packaging
HRL Technology
New Zealand Paperboard Packaging Association

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee PK-019 Methods of Test for Pulp and Paper, to supersede AS/NZS 1301.455s:1993, *Methods of test for pulp and paper,* Method 455s: *Colour measurement with a diff/0° geometry tristimulus reflectometer*.

The objective of this Standard is to specify the equipment for measuring the diffuse reflectance factor of pulp, paper or board and the procedures for calibrating that equipment.

This Standard is identical with, and has been reproduced from ISO 5631-2:2008, *Paper and board—Determination of colour by diffuse reflectance*—Part 2: *Outdoor daylight conditions (D65/10°)*.

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text 'this part of ISO 5631' should read 'this Australian/New Zealand Standard'.

(b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
ISO 2469	Paper, board and pulps—Measurement of diffuse radiance factor	AS/NZS 1301	Methods of test for pulps and paper
		1301.436	Method 436: Measurement of diffuse radiance factor

Only normative references that have been adopted as Australian or Australian/New Zealand Standard have been listed.

The term 'normative' has been used in this Standard to define the application of the annex to which it applies. A 'normative' annex is an integral part of a Standard.

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INTRODUCTION

The colour of an object can be uniquely characterized by means of a triplet of colour coordinates such as the 1964 CIE tristimulus values or the CIELAB 1976 L^*, a^*, b^* coordinates.

Apart from the optical properties of the sample, the values of such coordinates depend upon the conditions of measurement, particularly the spectral and geometric characteristics of the instrument used. This part of ISO 5631 should therefore be read in conjunction with ISO 2469.

This part of ISO 5631 describes the measurement and description of colour in terms of the CIE illuminant D65 and the CIE 1964 (10°) standard observer. The analogous measurement and description of colour in terms of the CIE illuminant C and the CIE 1931 (2°) standard observer are described in ISO 5631-1[1)].

ISO 5631-3 describes the measurement and description of colour in terms of the CIE illuminant D50 and the CIE 1931 (2°) standard observer. This method is especially applicable to graphic arts situations where the customer wishes to make measurements under these illuminant/observer conditions. The choice of illuminant conditions is important when determining the colour coordinates of white papers containing a fluorescent whitening agent. In ISO 5631-1, the UV content of the illumination is much lower, approximating UV levels encountered in indoor viewing conditions.

1) To be published.

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AUSTRALIAN/NEW ZEALAND STANDARD

Methods of test for pulp and paper

Method 455:
Determination of colour by diffuse reflectance—Outdoor daylight conditions (D65/10°)

1 Scope

This part of ISO 5631 specifies a method for measuring the colour of paper and board by the diffuse reflectance method with the elimination of specular gloss.

It may be used to determine the colour of papers or boards that contain fluorescent whitening agents, provided the UV content of the illumination on the test piece has been adjusted to conform to that in the CIE standard illuminant D65, using a fluorescent reference standard with an assigned CIE whiteness (D65/10°) value provided by an ISO/TC 6 authorized laboratory, as described in ISO 11475.

This part of ISO 5631 is not applicable to coloured papers or boards that incorporate fluorescent dyes or pigments.

2 Normative references

The following referenced documents are indispensable for the application 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 2469, *Paper, board and pulps — Measurement of diffuse radiance factor*

ISO 11475:2004, *Paper and board — Determination of CIE whiteness, D65/10° (outdoor daylight)*

CIE Publication 15:2004, *Colorimetry*, 3rd ed.

ASTM E 308-06, *Standard Practice for Computing the Colors of Objects by Using the CIE System*

3 Terms and definitions

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

3.1
radiance factor
β
ratio of the radiance of a surface element of a body in the direction delimited by a given cone, with its apex at the surface element, to that of the perfect reflecting diffuser under the same conditions of illumination

NOTE For fluorescent (luminescent) materials, the total radiance factor, β, is the sum of two portions, the reflected radiance factor, β_S, and the luminescent radiance factor, β_L, so that $\beta = \beta_S + \beta_L$.

For non-fluorescent materials, the reflected radiance factor, β_S, is numerically equal to the reflectance factor, R.

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