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Textiles - Tests for colour fastness - Part B02: Colour fastness to artificial light: Xenon arc fading lamp test (ISO 105-B02:2014)

Textilien - Farbechtheitsprüfungen - Teil B02: Farbechtheit gegen künstliches Licht: Xenonbogenlicht (ISO 105-B02:2014)

Textiles - Essais de solidité des teintures - Partie B02: Solidité des teintures à la lumière artificielle: Lampe à arc au xénon (ISO 105-B02:2014)

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN ISO 105-B02:2014) has been prepared by Technical Committee ISO/TC 38 “Textiles” in collaboration with Technical Committee CEN/TC 248 “Textiles and textile products” the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by February 2015, and conflicting national standards shall be withdrawn at the latest by February 2015.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 105-B02:2014 has been approved by CEN as EN ISO 105-B02:2014 without any modification.

INTERNATIONAL STANDARD

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Sixth edition
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Textiles — Tests for colour fastness —

Part B02: Colour fastness to artificial light: Xenon arc fading lamp test

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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).

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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.

The committee responsible for this document is ISO/TC 38, *Textiles*, Subcommittee SC 1, *Tests for coloured textiles and colorants*.

This sixth edition cancels and replaces the fifth edition (ISO 105-B02:2013), of which it constitutes a minor revision.

ISO 105 consists of many parts designated by a part letter and a two-digit serial number (e.g. A01), under the general title *Textiles — Tests for colour fastness*. A complete list of these parts is given in ISO 105-A01.

Textiles — Tests for colour fastness —

Part B02:
Colour fastness to artificial light: Xenon arc fading lamp test

1 Scope

This part of ISO 105 specifies a method intended for determining the effect on the colour of textiles of all kinds and in all forms to the action of an artificial light source representative of natural daylight (D65). The method is also applicable to white (bleached or optically brightened) textiles.

This method allows the use of two different sets of blue wool references. The results from the two different sets of references may not be identical.

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 105-A01, *Textiles — Tests for colour fastness — Part A01: General principles of testing*

ISO 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

ISO 105-A05, *Textiles — Tests for colour fastness — Part A05: Instrumental assessment of change in colour for determination of grey scale rating*

ISO 105-B01:2014, *Textiles — Tests for colour fastness — Part B01: Colour fastness to light: Daylight*

ISO 105-B05, *Textiles — Tests for colour fastness — Part B05: Detection and assessment of photochromism*

ISO 105-B08, *Textiles — Tests for colour fastness — Part B08: Quality control of blue wool reference materials 1 to 7*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 9370, *Plastics — Instrumental determination of radiant exposure in weathering tests — General guidance and basic test method*

CIE[1)] Publication No. 51, *Method for assessing the quality of daylight simulators for colorimetry*

3 Principle

A specimen of the textile to be tested is exposed to artificial light under controlled conditions, together with a set of reference materials. The colour fastness is assessed by comparing the change in colour of the test specimen with that of the reference materials used.

NOTE General information on colour fastness to light is given in Annex D.

1) Commission Internationale de l'Éclairage, CIE Central Bureau, Kegelgasse 27, A-1030, Vienna, Austria www.cie.co.at.

4 Terms and definitions

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

4.1
test specimen
portions of the textile to be tested and which are representative parts of the item to be tested

Note 1 to entry: This is used for comparison between the exposed and the original (untested) state.

4.2
reference specimen
portion of a reference material that is to be exposed simultaneously with the test specimen

Note 1 to entry: Multiple reference specimens may be required to determine the test results.

4.3
blue wool reference material
one of a series of blue dyed wool textile materials with a known reaction to light

4.4
test chamber
area within the apparatus capable of meeting and maintaining the requirements for temperature, light and humidity

4.5
chamber relative humidity
ratio of the actual water vapour pressure in the test chamber to the saturation water vapour pressure of water at the same temperature, expressed as a percentage

4.6
effective humidity
combination of air and surface temperatures and air relative humidity which governs the moisture content at the surface of the test specimen during exposure

4.7
humidity-test control fabric
a red azoic dyed cotton fabric of known sensitivity to humidity and light

Note 1 to entry: This red azoic dyed fabric is used as a reference material to ensure that the effective humidity requirements are met.

4.8
photochromism
change in colour of a substrate after brief exposure to light, which is substantially returned to its original shade after storage in the dark

4.9
flip-flop mode
mode of operation whereby the specimen holders revolve around the central light source and on alternate rotations the specimen holders are automatically rotated 180° about their vertical axis so that the test specimens face towards the light source only every alternate revolution

5 Materials and apparatus

5.1 Reference materials

5.1.1 General

Either of two sets of blue wool reference may be used. The colour fastness ratings mentioned in this part of ISO 105 are obtained by comparison with either blue wool references 1 to 8 (*preferred* in Europe) or blue wool references L2 to L9 (*preferred* in America). The results from the two sets of references are not interchangeable. Information on the relationship between the two sets of blue wool reference materials can be found in ISO 105-B01:2014, 4.1.

5.1.2 Blue wool reference materials 1 to 8

Blue wool references developed and produced in Europe are identified by the numerical designation 1 to 8. These references are blue wool materials dyed with the dyes listed in Table 1. They range from 1 (very low colour fastness to light) to 8 (very high colour fastness to light) so that each higher-numbered reference is approximately twice as fast as the preceding one.

The blue wool references 1 to 8 used in this test shall meet the quality requirements specified in ISO 105-B08.

Table 1 — Dyes for blue wool references 1 to 8

Reference	Dye (Colour Index designation)[a]
1	CI Acid Blue 104
2	CI Acid Blue 109
3	CI Acid Blue 83
4	CI Acid Blue 121
5	CI Acid Blue 47
6	CI Acid Blue 23
7	CI Solubilised Vat Blue 5
8	CI Solubilised Vat Blue 8

[a] The Colour Index (fourth edition) is published by the Society of Dyers and Colourists, P.O. Box 244, Perkin House, 82 Grattan Road, Bradford BD1 2JB, West Yorkshire, UK, and by the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709-2215, USA.

5.1.3 Blue wool reference materials L2 to L9

Blue wool references developed and produced in America are identified by the letter L followed by the numerical designation 2 to 9. These eight references are prepared by blending varying proportions of wool dyed with CI Mordant Blue 1 (Colour Index, fourth edition, CI Constitution Number 43830) and wool dyed with CI Solubilised Vat Blue 8 (Colour Index, fourth edition, CI Constitution Number 73801), so that each higher-numbered reference is approximately twice as fast as the preceding reference.

Data in Annex C are presented to illustrate the relationship of each of the blue wool references on exposure to fixed amounts of radiant energy.

5.1.4 Humidity-test control

The effective humidity can **only** be measured by determining the colour fastness to light of a specific humidity-test control fabric (see 4.7).