BRITISH STANDARD

BS EN ISO
105-B08:1999

Textiles — Tests for colour fastness —

Part B08: Quality control of blue wool reference materials 1 to 7

cc ERIC SIT
LINDA GALLAGHER
STUART WEBSTER

18/9

The European Standard EN ISO 105-B08:1999 has the status of a British Standard

ICS 59.080.01

National foreword

This British Standard is the English language version of EN ISO 105-B08:1999. It is identical with ISO 105-B08:1995.

The UK participation in its preparation was entrusted to Technical Committee TCI/81, Colour fastness testing and colour measurement, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN ISO title page, the EN ISO foreword page, the ISO title page, page ii, pages 1 to 6, the annex ZA page and a back cover.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 105-B08

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English version

Textiles - Tests for colour fastness - Part B08: Quality control of blue wool reference materials 1 to 7 (ISO 105-B08:1995)

Textiles - Essais de solidité des teintures - Partie B08: Maîtrise de la qualité des matériaux de référence 1 à 7 de laine teinte en bleu (ISO 105-B08:1995)

Textilien - Farbechtheitsprüfungen - Teil B08: Überprüfung der blauen Lichtechtheitstypen aus Wollgewebe 1 bis 7 (ISO 105-B08:1995)

This European Standard was approved by CEN on 25 June 1999.

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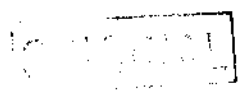


EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of the International Standard from Technical Committee ISO/TC 38 "Textiles" of the International Organization for Standardization (ISO) has been taken over as an European Standard by 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 January 2000, and conflicting national standards shall be withdrawn at the latest by January 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 105-B08:1995 has been approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

INTERNATIONAL STANDARD

ISO 105-B08

First edition
1995-06-01

Textiles — Tests for colour fastness —

Part B08:
Quality control of blue wool reference materials 1 to 7

Textiles — Essais de solidité des teintures —

Partie B08: Maîtrise de la qualité des matériaux de référence 1 à 7 de laine teinte en bleu

Reference number
ISO 105-B08:1995(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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 105-B08 was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 1, *Tests for coloured textiles and colorants*.

ISO 105 was previously published in thirteen "parts", each designated by a letter (e.g. "Part A"), with publication dates between 1978 and 1985. Each part contained a series of "sections", each designated by the respective part letter and by a two-digit serial number (e.g. "Section A01"). These sections are now being republished as separate documents, themselves designated "parts" but retaining their earlier alphanumeric designations. A complete list of these parts is given in ISO 105-A01.

Annexes A and B of this part of ISO 105 are for information only.

Textiles — Tests for colour fastness —

Part B08:
Quality control of blue wool reference materials 1 to 7

1 Scope

This part of ISO 105 describes a method for carrying out quality control of production batches of the blue wool reference materials 1 to 7 which are to be used in the appropriate parts of ISO 105-B series of test methods for colour fastness to light.

The method specifies one procedure for instrumental assessment of the evenness of dyeing and two procedures for assessing the fading characteristics of the reference materials, one of which uses visual assessment techniques and the other instrumental assessment.

The characteristics of the reference material(s) under test then are compared with the characteristics of master reference material(s).

The method is applicable to all dyed wool fabrics intended for use as reference materials 1 to 7 (see ISO 105-B01:1994, subclause 4.1.1).

NOTES

1 This method is not suitable for blue wool reference 8, since the time required to fade to grey scale 4 and grey scale 3 contrasts would be inordinately long. An alternative method is under consideration for application to blue wool reference 8.

2 The method given is based on ISO 105-B02, which is considered internationally to be the most widely employed method for testing colour fastness to light and to be representative of all methods where the use of blue wool references is specified.

3 Information on levels of acceptance and storage conditions is given in annexes A and B respectively.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 105. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 105 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 105-A01:1994, *Textiles — Tests for colour fastness — Part A01: General principles of testing.*

ISO 105-A02:1993, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour.*

ISO 105-B01:1994, *Textiles — Tests for colour fastness — Part B01: Colour fastness to light: Daylight.*

ISO 105-B02:1994, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test.*

ISO 105-J03:1995[1], *Textiles — Tests for colour fastness — Part J03: Calculation of colour differences.*

1) To be published.

3 Principle

Specimens from the reference material under test are examined as follows:

a) spectrophotometric assessment of the evenness of dyeing;

b) visual assessment of the fading characteristics in comparison with the appropriate master reference material (see 4.7);

c) spectrophotometric assessment of the fading characteristics.

4 Apparatus

4.1 Spectrophotometer, capable of measuring reflectance values over the visible wavelength range 400 nm to 700 nm of samples of a size relevant to the test method (see 6.2.1).

4.2 Computer and associated software, capable of calculating colour differences in accordance with the conditions specified in 6.1.2 and 6.2.2 .

4.3 Fading apparatus, containing a xenon arc light source capable of operating under conditions specified in ISO 105-B02:1994, subclause 4.2.1.

4.4 Opaque cover, of cardboard or other thin opaque material (see ISO 105-B02:1994, subclause 4.2.2).

4.5 Black-panel thermometer (see ISO 105-B02: 1994, subclause 4.2.3.1).

NOTE 4 Black-panel thermometers are available from the manufacturers of fading apparatus.

4.6 Humidity test control (see ISO 105-B02:1994, subclause 4.1.3).

NOTE 5 For information on the sources of supply of humidity test controls, see ISO 105-A01:1994, clause 8, note 1.

4.7 Master reference material, appropriate to the material under test.

Sets of master reference materials are held in several countries for reference.

4.8 Grey scale for assessing change in colour, in accordance with ISO 105-A02.

NOTE 6 For information on the sources of supply of grey scales for assessing change in colour, see ISO 105-A01:1994, clause 8, note 1.

4.9 Colour-matching cabinet, equipped with illumination approximating natural daylight.

NOTE 7 Other types of illumination should not be used.

5 Preparation of test specimens

Prepare three specimens from each dyed piece of blue wool reference material under test. These specimens shall be approximately 300 mm in length across the full width of the material and shall be taken from the head end (H), the middle (M) and the tail end (T) of the piece.

6 Procedure

6.1 Evenness of dyeing

6.1.1 Fold the specimen under test as many times as necessary to form an opaque mass (at least four thicknesses are recommended) and mount it wrinkle-free in the spectrophotometer sample holder. Each of the three specimens shall be tested at the following three positions:

a) in the centre (C);

b) at a distance of 150 mm from the left-hand selvedge (L);

c) at a distance of 150 mm from the right-hand selvedge (R).

6.1.2 Adjust the spectrophotometer to large aperture and the light beam to include the specular component and, if optional, the ultraviolet component, using illuminant D_{65} and 10° observer.

NOTE 8 If these measurement conditions are unobtainable, report the measurement conditions used [see 7 e)].

6.1.3 Measure and record the reflectance values at the appropriate wavelengths. Take four readings for each measurement, rotating the specimen through 90° between readings, and use the mean of these four readings for the value of the measurement to be used in the calculations in 6.1.4.

6.1.4 Calculate the colour differences ΔE_{cmc} determining evenness of dyeing using the CMC (l:c) colour difference formula (see ISO 105-J03) with lightness (l) set equal to 2 and chroma (c) set equal to 1, i.e. CMC 2:1. Colour differences at the following positions shall be calculated:

HC vs. HR	MC vs. MR	TC vs. TR
HC vs. HL	MC vs. ML	TC vs. TL
HC vs. MC	MC vs. TC	TC vs. HC

6.2 Fading characteristics

6.2.1 Mounting of specimens

Mount two specimens from the middle portion (M) (see clause 5) of the reference material under test immediately above and below a specimen of the appropriate master reference material (4.7) mounted in the centre of the exposure card (see figure 1). The specimens shall have the dimensions specified in ISO 105-B02:1994, subclauses 5.1 and 5.3. Mask the centre third of the mounted specimens with an opaque cover (4.4) AB, as shown in figure 2 a).

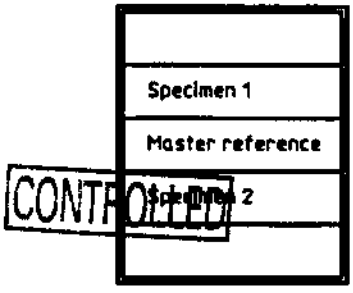
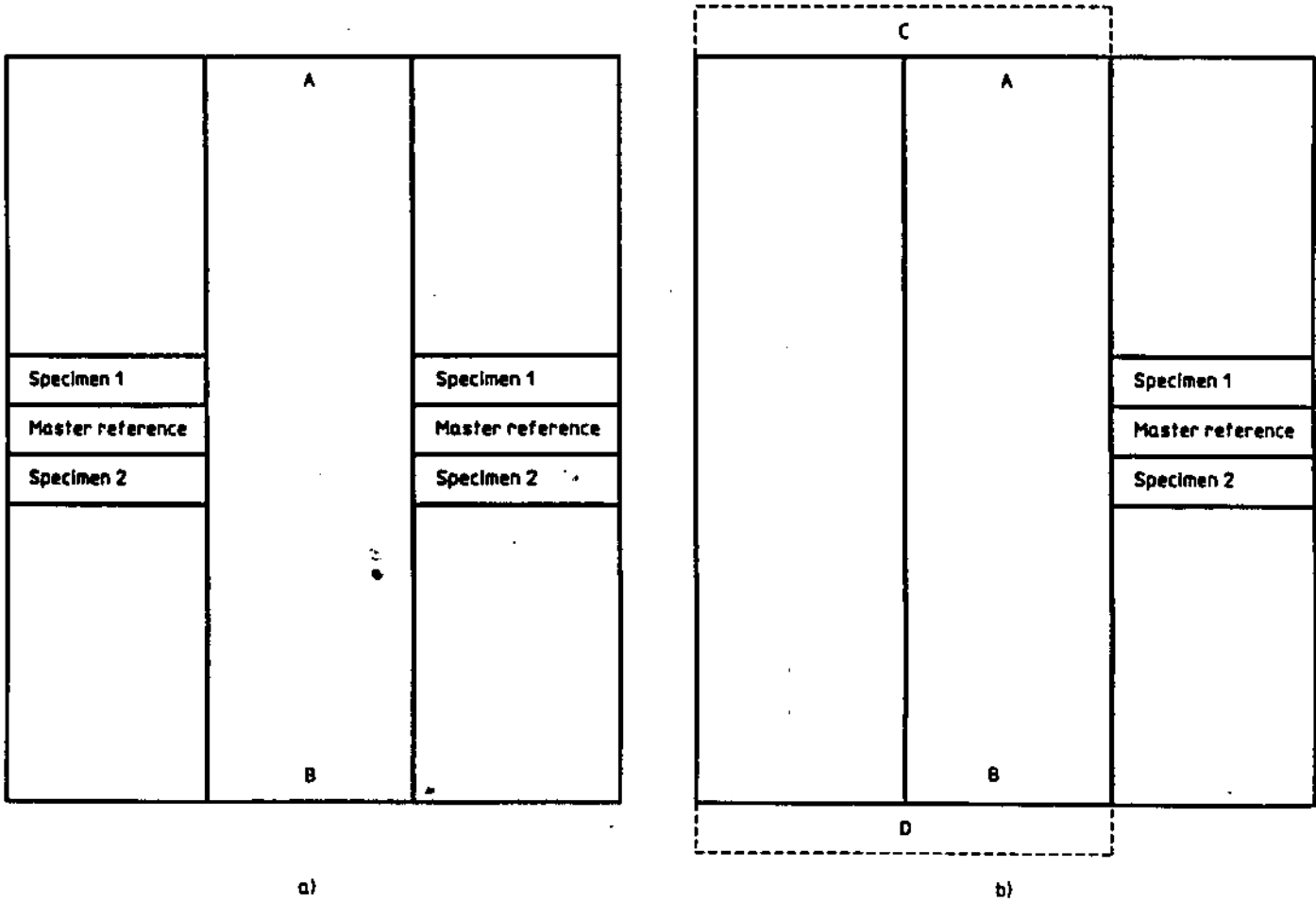


Figure 1 — Mounting of specimens



AB: opaque cover
CD: second cover

Figure 2 — Masking of specimens

6.2.2 Exposure of specimens

Set the fading apparatus (4.3) to normal conditions of black-panel temperature and effective humidity as specified in ISO 105-B02:1994, subclause 6.2 a), using the procedure specified in ISO 105-B02:1994, subclause 7.1, and the humidity test control (4.6).

Expose the mounted specimens in the fading apparatus until a contrast between the exposed and unexposed areas of the master reference material is observed which is equivalent to step 4 on the grey scale for assessing change in colour (4.8). This assessment shall be made visually by an experienced assessor using a colour-matching cabinet (4.9).

At this point, mask the left-hand third of the specimen with a further opaque cover CD, as shown in figure 2 b). Continue the exposure until a contrast between the unexposed (centre) portion and the exposed (right-hand) portion of the master reference material is observed which is equivalent to step 3 on the grey scale. At this point terminate the exposure.

NOTE 9 For visual assessment during the exposure period, it is sufficient for only one assessor to decide when to add the second cover and when to terminate exposure.

6.2.3 Visual assessment of fading characteristics

A minimum of three experienced assessors shall each make visual assessments on two separate days. Using a colour-matching cabinet (4.9), assess the colour change of the faded areas of the specimens under test in comparison with the unfaded area of the same specimen with the aid of the grey scale (4.8).

Repeat the assessment for the master reference materials.

6.2.4 Spectrophotometric assessment of fading characteristics

Adjust the spectrophotometer to small aperture and the light beam to include the specular component and, if optional, the ultraviolet component, using illuminant D_{65} and 10° observer.

NOTE 10 If these measurement conditions are unobtainable, report the measurement conditions used [see clause 7 e)].

Measure and record the reflectance values, at the appropriate wavelengths, at all three levels of exposure of the two specimens and of the master reference materials on the exposure card.

Calculate the colour differences ΔE_{cmc} using the CMC (l:c) colour difference formula (see ISO 105-J03) with both lightness (l) and chroma (c) set to 1 (i.e. CMC 1:1), comparing the unexposed specimen with the exposed portion at grey scale 4 (GS 4) fade and with the exposed portion at grey scale 3 (GS 3) fade for each of the three specimens tested.

7 Test report

The test report shall include the following information:

a) the number and year of publication of this part of ISO 105, i.e. ISO 105-B08:1995;

b) all details necessary for complete identification of the sample(s) tested;

c) if required, the manufacturer's name and model reference of the fading apparatus used;

d) if required, the supplier's name and model reference of the spectrophotometer used;

e) the conditions of spectrophotometric measurement used, if different from those specified in 6.1.2 and 6.2.4;

f) the calculated results of the check for evenness of dyeing (see 6.1.4);

g) the ratings for visually assessed colour change for each exposure level (GS 4 and GS 3) for both the master reference material and the reference material under test (see 6.2.3);

h) the calculated colour differences for each exposure level (GS 4 and GS 3) for both master reference material and the reference material under test (see 6.2.4).

NOTE 11 See annex A for levels of acceptance of results reported in f), g) and h).

Annex A
(informative)

Levels of acceptance

A.1 General

Criteria are suggested in A.2 to A.4 by which the suitability of a test fabric for use as a blue wool reference material can be adjudged.

A.2 Evenness of dyeing

The ΔE_{cmc} values reported under 6.1.4 should not exceed 0,5, although it is recognized that minor variations in lightness and hue from batch to batch can occur which are not detrimental to the fading characteristics.

A.3 Visual assessment of fading

The average value of the results (see 6.2.3) should be regarded as the principal arbiter of fading characteristics.

Samples which are assessed at grey scale ratings identical to those of the master reference material should be considered as acceptable.

Samples which are assessed at more than one-half of a grey scale rating different from the master reference material should be considered as unacceptable.

Samples which are assessed at one-half of a grey scale rating different from the master reference material should be considered as borderline. In these cases, and in cases where there is a measure of disagreement among the assessors, the results of the spectrophotometric assessment of fading should be taken into consideration.

A.4 Spectrophotometric assessment of fading

Compare the colour difference of the unexposed portion of the master reference material against its GS 4 fade in turn with the colour differences of the unexposed portions of the specimens against their respective GS 4 fades. Repeat for the respective GS 3 fades. The sample should be considered unacceptable if any of these comparisons is greater than 0,5.

Annex B
(informative)

Storage conditions

It is recommended that blue wool references be stored in a cool, dry, dark place free from chemical or other types of fumes. Under such conditions these materials will not deteriorate for a number of years.

Annex ZA (normative)
Normative references to International publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

Publication	Year	Title	EN	Year
ISO 105-A01	1994	Textiles - Tests for colour fastness - Part A01: General principles of testing	EN ISO 105-A01	1995
ISO 105-A02	1993	Textiles - Tests for colour fastness - Part A02: Grey scale for assessing change in colour	EN 20105-A02	1994
ISO 105-B02	1988	Textiles - Tests for colour fastness - Part B02: Colour fastness to artificial light (Xenon arc fading lamp test)	EN 20105-B02	1992
ISO 105-J03	1995	Textiles - Tests for colour fastness - Part J03: Calculation of colour differences.	EN ISO 105-J03	1997

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