
Textiles — Tests for colour fastness —
Part B07:
Colour fastness to light of textiles wetted
with artificial perspiration

Textiles — Essais de solidité des teintures —

Partie B07: Solidité des teintures à la lumière de textiles mouillés par de la sueur artificielle



Reference number
ISO 105-B07:2009(E)

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 105-B07 was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 1, *Tests for coloured textiles and colorants*.

ISO 105 was previously published in 13 “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 [2].

Introduction

This part of ISO 105 was developed using acid perspiration solution 1 and the exposure conditions listed in ISO 105-B02.

Textiles — Tests for colour fastness —

Part B07:

Colour fastness to light of textiles wetted with artificial perspiration

1 Scope

This part of ISO 105 specifies a method for determining the resistance of the colour of textiles, of all kinds and in all forms, to the combined effect of wetting with acid or alkaline artificial perspiration solutions and an artificial light source representing natural daylight (D65).

2 Normative reference(s)

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

ISO 105-E04, *Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration*

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

3 Principle

Specimens of textiles wetted with a selected artificial perspiration solution are exposed to artificial light under prescribed conditions, together with a specified blue wool reference material. When this blue wool reference material shows the prescribed change of colour, the specimens are removed and the change in colour of each specimen is assessed by comparison with the grey scale for assessing change in colour or instrumentally.

4 Apparatus, material and reagents

- 4.1 **Balance**, with a weighing accuracy of 0,01 g.
- 4.2 **pH meter**, accurate to 0,01.
- 4.3 **Grey scale for assessing change in colour**, in accordance with ISO 105-A02.

4.4 **Blue wool reference material**, in accordance with ISO 105-B02.

4.5 **Artificial perspiration solutions**, either 5.1, 5.2 or 5.3.

Alternative perspiration solutions can be used. The specific formulas should be given in the Test report [9 c)].

4.6 **Water-repellent white card stock**, without optical brightener.

4.7 **Xenon-arc-lamp fading apparatus**, in accordance with ISO 105-B02.

4.8 **Grade 3 water**, complying with ISO 3696.

4.9 **Spectrophotometer** or **colorimeter** for assessing change in colour, in accordance with ISO 105-A05.

5 Preparation of reagents

5.1 **Acid perspiration solution 1**, freshly prepared (see AATCC TM 15^[1]) using water (4.8) and containing, per litre:

- 0,25 g of L-histidine monohydrochloride monohydrate ($C_6H_9N_3O_2 \cdot HCl \cdot H_2O$);
- 10 g of sodium chloride (NaCl);
- 1 g of disodium hydrogen phosphate, anhydrous (Na_2HPO_4);
- 1 g of lactic acid 85 % ($CH_3CHOHCOOH$).

The pH of the resulting solution should be pH 4,3 ($\pm 0,2$).

5.2 **Acid perspiration solution 2**, freshly prepared (in accordance with ISO 105-E04) using water (4.8) and containing, per litre:

- 0,5 g of L-histidine monohydrochloride monohydrate ($C_6H_9N_3O_2 \cdot HCl \cdot H_2O$);
- 5 g of sodium chloride (NaCl);
- 2,2 g of sodium dihydrogen orthophosphate dihydrate ($NaH_2PO_4 \cdot 2H_2O$).

The solution is brought to pH 5,5 ($\pm 0,2$) with 0,1 mol/l sodium hydroxide solution.

5.3 **Alkali perspiration solution**, freshly prepared (in accordance with ISO 105-E04) using water (4.8) and containing, per litre:

- 0,5 g L-histidine monohydrochloride monohydrate ($C_6H_9N_3O_2 \cdot HCl \cdot H_2O$);
- 5 g of sodium chloride (NaCl); and

either

- 5 g of disodium hydrogen orthophosphate dodecahydrate ($Na_2HPO_4 \cdot 12H_2O$);

or

- 2,5 g of disodium hydrogen orthophosphate dihydrate ($Na_2HPO_4 \cdot 2H_2O$).

The solution is brought to pH 8,0 ($\pm 0,2$) with 0,1 mol/l sodium hydroxide solution.

6 Test specimen

The size of the test specimen will depend on the number of specimens to be tested and on the shape and dimensions of the specimen holders supplied with the apparatus. The minimum size for the samples is 40 mm × 10 mm. One specimen is required for each solution to be tested.

The specimen may be a strip of cloth, with the yarn wound close together on a card or laid parallel and fastened on a card, or a mat of fibres combed and compressed to give a uniform surface and fastened on a card.

7 Procedure

7.1 Weigh the specimen to $\pm 0,01\text{g}$.

7.2 Place the test specimen in a smooth flat-bottomed dish and add 50 ml of freshly prepared perspiration solution (5.1, 5.2 or 5.3, as agreed by interested parties) to be tested so as to cover the specimen. Soak the test specimen in the solution at room temperature for (30 ± 2) min with occasional agitation and squeezing to ensure complete wetting.

7.3 Remove the test specimen from the solution and blot it to remove excess solution. Reweigh the specimen to determine (100 ± 5) % wet pick-up.

7.4 Attach each specimen to a water-repellent white card (4.6).

7.5 Mount the test specimen and white card in a specimen holder suitable for the xenon-arc-lamp fading apparatus (4.7), without masking.

7.6 Mount the blue wool reference material (4.4) onto a second card and mask in accordance with ISO 105-B02. Do not wet with test solution.

7.7 The blue wool reference material and the exposure conditions should be agreed upon by the interested parties.

NOTE The different exposure conditions in ISO 105-B02 do not lead to the same results.

7.8 Expose specimens together with the blue wool reference material (4.4) in the light-fading apparatus in accordance with one of the exposure conditions agreed upon as specified in ISO 105-B02. The filter systems and irradiance level shall be in accordance with ISO 105-B02.

Expose the specimens and blue wool reference material until the prescribed degree of fading of the blue wool reference material, as indicated in ISO 105-B02, has been achieved, as determined on the grey scale for assessing the change in colour (see ISO 105-A02) or instrumentally (see ISO 105-A05).

7.9 Remove the specimens and rinse by occasionally squeezing them with grade 3 water (4.8) for 1 min. Dry them by hanging them in air at a temperature not exceeding 60 °C.

8 Evaluation

Assess the change in colour of each specimen by comparison with the grey scale for assessing change in colour (4.3), or instrumentally (4.9).

9 Test report

The test report shall include the following information:

- a) a reference to this International Standard;
- b) all details necessary for the identification of the sample tested;
- c) the perspiration solution(s) used;
- d) the blue wool reference material used;
- e) the numerical rating for change in colour of the specimen for each type of perspiration solution used;
- f) the xenon-arc-lamp apparatus used, chosen exposure condition, and machine set-up;
- g) any deviation from the test method specified;
- h) date of the test.

Bibliography

- [1] AATCC TM 15, *Colorfastness to Perspiration*
- [2] ISO 105-A01, *Textiles — Tests for colour fastness — Part A01: General principles of testing*

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