INTERNATIONAL STANDARD

ISO 105-C07

First edition
1999-03-15

Textiles — Tests for colour fastness —

Part C07:
Colour fastness to wet scrubbing of pigment printed textiles

Textiles — Essais de solidité des couleurs —
Partie C07: Solidité des couleurs des textiles teints ou imprimés aux pigments au nettoyage à la brosse mouillée

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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-C07 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.

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Textiles — Tests for colour fastness —

Part C07:
Colour fastness to wet scrubbing of pigment printed textiles

1 Scope

This part of ISO 105 describes a method for determining the colour fastness to wet scrubbing of pigment dyed or pigment printed textiles of all kinds.

The test is not applicable to loose fibres.

2 Normative references

The following standards contains 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 listed 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-C01:1989, *Textiles — Tests for colour fastness — Part C01: Colour fastness to washing: Test 1.*

ISO 105-C06:1994, *Textiles — Tests for colour fastness — Part C06: Colour fastness to commercial and industrial laundering.*

3 Principle

The test specimen is immersed in a soap solution or detergent solution, scrubbed for a specified time with a brush then rinsed and dried. The change in colour of the test specimen is assessed using the grey scale.

4 Apparatus and reagents

4.1 Testing device, consisting of a means of wet scrubbing, moving to and fro in a straight line along a 100 mm ± 10 mm track on the test specimen with a force of 9,0 N ± 0,2 N, with approximately one complete to and fro cycle per second. The base board of the device is large enough to clamp on a test specimen of not less than 80 mm × 250 mm.

4.2 Brush, consisting of five rows with 13 tufts or 14 tufts per row each with 16 stiff polyamide bristles of 0,36 mm per tuft. The tufts are cut to a uniform length of 15 mm and the distance between tufts is 4 mm. The brush permits a width of scrubbing of 55 mm ± 2 mm. Other brushes similar to the brush described above may be used as long as there is agreement between interested parties and the particular brush used is reported.

New brushes shall be blunted before use by scrubbing the brush for at least 100 cycles using abrasive or cloth paper (see note 2). If necessary repeat until the brush surface is perfectly aligned with the abrasive or cloth paper on the base board. Depending on the brush used, a residue may be noticed on the abrasive paper.

NOTE 1 A brush complying with following requirements has been found suitable:

Linear density (of fibre): 102,8 dtex

Tensile strength (of fibre): 0,032 5N (cv 4,33 %)

Breaking elongation (of fibre): 6,9 % (cv 12,8 %)

Modulus of elasticity (of fibre): 0,002 2 N/dtex

Press capability (of brush): 2,44 kg (cv 8 %)

Pull out from brush (tuft): 14,2 N (cv 18 %)

Pull out from brush (single fibre): 0,8 N (cv 38 %)

where cv is the coefficient of variation.

NOTE 2 Abrasive paper of 120 mesh (0 #) black aluminium oxide cloth has been found suitable. If other abrasive paper is used, it should be reported.

4.3 Soap, without optical brightener, as specified in 4.2 of ISO 105-C01:1989.

4.4 Sodium perborate.

4.5 Reference detergent.

At least two different reference detergents may be used:

a) **ECE reference detergent 77**, without optical brightener, or

b) **1993 AATCC standard reference detergent WOB**

Both are specified in 4.4 of ISO 105-C06:1994.

Other detergents may be used as agreed between interested parties and reported in the test report.

4.6 Grey scale, for assessing change in colour, complying with ISO 105-A02:1993.

4.7 Grade 3 water, see 8.1 of ISO 105-A01:1994.

5 Test specimen

5.1 If the textile to be tested is a fabric, prepare one specimen not less than 80 mm × 250 mm, with the long direction parallel to the warp yarns (or the direction of manufacture). If multicoloured textiles are to be tested and all colours on the textile cannot be included in one specimen, prepare further test specimens and assess each colour separately.

5.2 If the textile to be tested is yarn or thread, knit it nto fabric to provide a specimen at least 80 mm × 250 mm. The knit construction should be agreed on between the interested parties. Alternatively, the yarn can be wound on a plastic plate. The construction chosen can influence test results.

6 Procedure

Dissolve 5 g of soap (4.3) and 2 g sodium perborate (4.4) in 1 l of water (4.7); or dissolve 4 g detergent A (4.5) together with 1 g sodium perborate (4.4) or 4 g detergent B (4.5) in 1 l of water(4.7).

Pour about 250 ml of the prepared soap solution or about 250 ml prepared detergent solution into a 500 ml beaker, so that the ratio of solution to specimen is not less than 50:1. Raise the temperature of the solution to one of the alternatives given below and indicate the alternative selected in the test report.

Alternative soap or detergent solution temperatures:

— 27 °C ± 3 °C

— 41 °C ± 3 °C

— 49 °C ± 3 °C

— 60 °C ± 3 °C

— 70 °C ± 3 °C

Immerse the specimen in the solution for 1 min until thoroughly wetted, then remove the specimen and squeeze off the excess solution with two glass rods or other suitable means. Place the squeezed specimen on the baseboard of the testing device (4.1) and fasten it on two ends by clamps or other means, depending on the test device used so that the long direction of the specimen follows the track of the device. Keep fastened during scrubbing. Lay the brush (4.2) on the specimen and allow it to scrub to and fro along a 100 mm ± 10 mm track either 25 cycles, 50 cycles or 100 cycles with a force of 9,0 N ± 0,2 N. To keep the specimen wet, add approximately 10 ml soap solution or 10 ml detergent solution to the specimen after every 25 times scrubbing.

At completion of scrubbing, remove the specimen from the testing device and rinse it thoroughly with warm (approximately 40 °C ± 3 °C) water (4.7), then dry the specimen by laying on a horizontal surface at a temperature not exceeding 60 °C.

Clean the brush by removing any fibre, yarn or thread and any soap or detergent solution on the tufts before the next test. The brush should be examined before use and replaced if excessively worn.

Assess the change in colour of the test specimen with the grey scale (4.6) after conditioning, according to ISO 105-A02.

7 Test report

The test report shall include the following information:

a) reference to this part of ISO 105, i.e. ISO 105-C07;

b) details of the sample tested;

c) which soap or detergent solution was used;

d) the brush used, if different from that described in 4.2;

e) the number of scrubs used;

f) the temperature selected;

g) the make and model number, if available, of the testing device;

h) the numerical rating for change in colour of the test specimen.

ICS 59.080.01

Price based on 3 pages