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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Textiles — Tests for colour fastness —

Part X11: Colour fastness to hot pressing

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Textiles — Essais de solidité des teintures

Partie X11: Solidité des teintures au repassage à chaud

ISO 105-X11:1987

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 105-X11 was prepared by Technical Committee ISO/TC 38, *Textiles*.

This third edition cancels and replaces the second edition (included in ISO 105-X: 1984), of which it constitutes a minor revision.

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.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Textiles — Tests for colour fastness —

Part X11:

Colour fastness to hot pressing

1 Scope and field of application

1.1 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 ironing and to processing on hot cylinders.

1.2 Tests are given for hot pressing when the textile is dry, when it is wet and when it is damp. The end-use of the textile usually determines which test should be made.

2 References

ISO 105, *Textiles — Tests for colour fastness*

Part A01 : General principles of testing.

Part A02 : Grey scale for assessing change in colour.

Part A03 : Grey scale for assessing staining.

ISO 139, *Textiles — Standard atmospheres for conditioning and testing.*

3 Principle

3.1 Dry pressing. A dry specimen is pressed with a heating device at a specified temperature and pressure for a specified time.

3.2 Damp pressing. A dry specimen is covered with a wet cotton adjacent fabric and pressed with a heating device at a specified temperature and pressure for a specified time.

3.3 Wet pressing. The upper surface of a wet specimen is covered with a wet cotton adjacent fabric and pressed with a heating device at a specified temperature and pressure for a specified time.

3.4 The change in colour of the specimen and the staining of the adjacent fabric are assessed with the grey scales immediately and again after a period of exposure to air.

4 Apparatus

4.1 Heating device, consisting of a pair of smooth and parallel plates, equipped with an accurately controllable electrical heating system and giving a pressure on the specimen of 4 ± 1 kPa (see 8.4). Heat should be transferred to the specimen from the upper side only; if the lower plate is equipped with a heating system which cannot be turned off, the heat resistant sheet (4.2) with which the device shall in any case be fitted (see 8.2 and 8.3) acts as a heat shield.

4.2 Smooth heat resistant sheet, of thickness 3 to 6 mm (see 8.2 and 8.3).

4.3 Wool flannel, of mass per unit area approximately 260 g/m².

Two layers of this material are used to make a pad of thickness approximately 3 mm. Similar smooth wool fabrics or felt can be used to give a pad of thickness approximately 3 mm.

4.4 Undyed, bleached and unmercerized cotton cloth, of mass per unit area 100 to 130 g/m² and with a smooth surface.

4.5 Cotton adjacent fabric, measuring 10 cm × 4 cm.

4.6 Grey scales for assessing change in colour and staining (see clause 2).

5 Test specimen

5.1 If the textile to be tested is fabric, use a specimen 10 cm × 4 cm.

5.2 If the textile to be tested is yarn, knit it into fabric and use a piece 10 cm × 4 cm or wind it closely round a piece of thin inert material measuring 10 cm × 4 cm to form a layer having only the thickness of the yarn.

5.3 If the textile to be tested is loose fibre, comb and compress enough of it to form a sheet 10 cm × 4 cm and sew the sheet on to a piece of cotton adjacent fabric to support the fibre.

6 Procedure

6.1 The following temperatures are used (see 8.1) :

- 110 ± 2 °C
- 150 ± 2 °C
- 200 ± 2 °C

When necessary, other temperatures may be used, provided that they are specially noted in the test report.

6.2 Specimens of materials that have been subjected to any heat or drying treatment must be allowed to condition in the standard temperate atmosphere for testing textiles (see clause 2), i.e. 65 ± 2 % relative humidity and a temperature of 20 ± 2 °C, before they are tested.

6.3 The bottom plate of the heating device is covered with the heat resistant sheet (4.2), wool flannel (4.3) and dry, undyed cotton cloth (4.4), whether it is heated or not (see also 8.3 and 8.4).

6.4 **Dry pressing.** Place the dry specimen on top of the cotton cloth covering the wool flannel padding (see 6.3). Lower the top plate of the heating device and leave the specimen for 15 s at the specified pressing temperature.

6.5 **Damp pressing.** Place the dry specimen on top of the cotton cloth covering the wool flannel padding (see 6.3). Soak a piece of cotton adjacent fabric measuring 10 cm × 4 cm in distilled water, and squeeze or extract it to contain its own mass of water. Place the wet fabric on top of the dry specimen. Lower the top plate of the heating device and leave the specimen for 15 s at the specified pressing temperature.

6.6 **Wet pressing.** Soak the specimen and a piece of cotton adjacent fabric 10 cm × 4 cm (4.5) in distilled water and squeeze or extract them to contain their own mass of water. Place the wet specimen on top of the dry cotton cloth covering the wool flannel pad (see 6.3) and place the wet adjacent fabric on the specimen. Lower the top plate of the heating device and leave the specimen for 15 s at the specified pressing temperature.

6.7 Assess the change in colour of the specimen with the appropriate grey scale immediately and again after the specimen has been allowed to condition for 4 h in the standard atmosphere for testing textiles.

6.8 Assess the staining of the cotton adjacent fabric with the appropriate grey scale. Use the more heavily stained side of the cotton adjacent fabric for the assessment.

7 Test report

Report the test procedure (dry, damp or wet) and the temperature of the heating device. Report the numerical rating for change in colour immediately after testing and after condition-

ing for 4 h in the standard atmosphere for testing textiles. Report the numerical rating for the staining of the cotton adjacent fabric.

8 Notes

8.1 The choice of pressing temperature used depends to a large extent on the type of fibre and on the construction of the fabric or garment. In the case of blends it is further suggested to use the temperature appropriate to the fibre with the lowest heat resistance. The indicated temperatures cover three commonly used pressing conditions.

8.2 The heating device may be the same as that used in the test for colour fastness to dry heat (excluding pressing) — see clause 8 of ISO 105, *Textiles — Tests for colour fastness — Part P01 : Colour fastness to dry heat (excluding pressing)* — and a suitable insulating material shall be used, whether the bottom plate is heated or not, to minimize heat transfer to or from the bottom of the test assembly (see 4.2 and 8.3).

8.3 The heat resistant sheet used for insulation should be smooth and not warped. It is best to complete the specimen assembly on the heat resistant sheet before placing it in the heating device. The heat resistant sheet should be cooled and the wet wool dried between tests.

8.4 In order to obtain the required pressure (4 ± 1 kPa) the total area of the wool flannel padding should bear a suitable relationship to the mass of the plate pressing down on the padding. If the fabric to be tested has an appreciable thickness, it will be necessary either to increase the area of the test specimen or to augment the pressure-bearing surface using a suitable template made from the same material as the test specimen. If the plates of the heating device are smaller than the specimen, the pressure (ratio of weight of top plate to its area) will depend on the design of the apparatus.

8.5 If a heating device is not available, a household iron may be used, but its temperature should be measured with a surface pyrometer or with temperature-sensitive papers. The iron should be weighted so that its area and total weight are in the appropriate ratio to exert a pressure of 4 ± 1 kPa. However, due to temperature differences between different points on the surface of the iron, accuracy and reproducibility are limited. When a hand iron is used, this fact shall be stated in the test report.

8.6 Under normal gravitational conditions, the area over which the weight of the heating-plate should be distributed can be calculated in square centimetres by multiplying the mass in kilograms of the heating-plate by the factor 24,525. If the area of the heating-plate is less than that of the specimen, the required mass is calculated in kilograms by dividing the plate area (expressed in square centimetres) by the same factor. For composite specimens 10 cm × 4 cm, the mass of the heating-plate assembly should be between 1,25 and 2,00 kg.

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