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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Textiles — Tests for colour fastness —

Part X06:
Colour fastness to soda boiling

Textiles — Essais de solidité des teintures —

Partie X06: Solidité des teintures au débouillissage à l'air libre

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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-X06 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 X06:
Colour fastness to soda boiling

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 the action of boiling dilute sodium carbonate solution. The method is mainly applicable to natural and regenerated cellulose materials.

1.2 Two tests are provided : one with and the other without the addition of a reduction inhibitor.

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.

3 Principle

A specimen of the textile between specified undyed cloths is rolled around a glass rod and treated with boiling sodium carbonate solution with and without the addition of a reduction inhibitor. The composite specimen is rinsed and dried. The change in colour of the specimen and the staining of the undyed cloths are assessed with the grey scales.

4 Apparatus and reagents

4.1 Vessel equipped with water-cooled reflux condenser of the finger type, to hold a cylindrical specimen 4 cm long in the boiling solution.

4.2 Glass rod, 0,5 to 0,8 cm in diameter.

4.3 Desized undyed cotton fabric, measuring 10 cm × 4 cm. (This material is *not* cotton adjacent fabric.)

4.4 Adjacent fabric, measuring 10 cm × 4 cm, of the type under test (or if fibre or yarn is being tested, adjacent fabric made from the same kind of fibre).

4.5 Sodium carbonate, solution containing 10 g of anhydrous sodium carbonate per litre.

4.6 Sodium carbonate, solution containing 10 g of anhydrous sodium carbonate and 4 g of sodium *m*-nitrobenzenesulfonate per litre.

4.7 Test controls : dyeings of CI Vat Red 1 (Colour Index, 3rd Edition) (see clause 8).

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

5 Test specimens

5.1 Two composite test specimens, prepared as follows, are required for the tests with and without the addition of a reduction inhibitor.

5.2 If the textile to be tested is fabric, place a specimen measuring 10 cm × 4 cm between one piece of undyed cotton fabric (4.3) and one piece of adjacent fabric (4.4) and sew along one of the shorter sides to form a composite specimen.

5.3 If the textile to be tested is yarn, knit it into fabric and treat it as in 5.2 or form a layer of parallel lengths of it between the two pieces of undyed fabric (4.3 and 4.4), the amount of yarn taken being approximately equal to half the combined mass of the undyed fabrics. Sew along one of the shorter sides to hold the yarn in place and to form a composite specimen.

5.4 If the textile to be tested is loose fibre, comb and compress an amount approximately equal to half the combined mass of the undyed fabrics (4.3 and 4.4) into a sheet 10 cm × 4 cm. Place the sheet between the two undyed fabrics and sew along all four sides to hold the fibre in place and to form a composite specimen.

5.5 Prepare two composite specimens of the test control (4.7) in the way outlined for fabric in 5.2.

6 Procedure

6.1 Carry out the operations described below in 6.2 to 6.4 with each composite test specimen and composite test-control specimen in parallel, in separate baths.

6.2 Roll the composite specimen compactly around the glass rod to form a cylinder 4 cm long and tie it uniformly, but not tightly, with thread.

6.3 Treat one composite specimen on the rod by boiling gently under reflux for 1 h in the sodium carbonate solution (4.5), at a liquor ratio of 30 : 1. Treat the other composite specimen in the same way and for the same time in boiling sodium carbonate solution containing sodium *m*-nitrobenzenesulfonate (4.6).

6.4 Remove the composite specimens from the rod immediately and rinse for 10 min in cold, running tap-water. Open out the composite specimens and dry them by hanging in air at a temperature not exceeding 60 °C, with the three parts in contact only at the line of stitching.

6.5 Assess the effect on the composite test-control specimens with the grey scales. The ratings of the test-control specimen after boiling with sodium *m*-nitrobenzenesulfonate should be

3-4 weaker, yellower, in respect of change in colour;

5 in respect of staining.

The ratings of the test-control specimen after boiling without sodium *m*-nitrobenzenesulfonate should be

2-3 weaker, yellower, in respect of change in colour;

2-3 in respect of staining.

If the test-control specimens do not yield these values, the test has not been carried out correctly, and the operations described in 6.1 to 6.4 inclusive should be repeated with fresh composite test specimens and fresh composite test-control specimens.

6.6 Assess the change in colour of the test specimen and the staining of the undyed cotton fabric (4.3) and the adjacent fabric (4.4) with the grey scales.

7 Test report

Report the numerical ratings for change in colour and the numerical ratings for staining of each kind of undyed fabric tested with sodium carbonate alone and with sodium carbonate and sodium *m*-nitrobenzenesulfonate reduction inhibitor.

When the two pieces of undyed fabric are the same and the two assessments of staining are different, report only the lower.

8 Notes

Test control

8.1 Reduction

CI Vat Red 1 (Colour Index, 3rd Edition) is pasted with 150 times its own mass of water, using an anionic wetting agent at the rate of 3 ml per gram of dye. 40 ml of sodium hydroxide (400 g/l) and 13 g of sodium dithionite are added per litre of dye-bath, and the dye is allowed to reduce for 15 min at 80 °C.

8.2 Dyeing

The dye-bath is set at a liquor ratio of 25 : 1. To it are added 2 to 3 ml of sodium hydroxide (400 g/l) and 1 g of sodium dithionite per litre of bath, followed by the calculated amount of reduced dye. The dyeing is started at 30 °C, and heat is applied for 15 min to bring the temperature to 60 °C. Dyeing is continued at this temperature for 30 min.

The specimen is then oxidized in air, rinsed in cold, running tap-water, soaped at the boil, rinsed in distilled water, then in cold, running tap-water, and dried.

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