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Textile floor coverings — Colour fastness to shampooing

Revêtements de sol textiles — Solidité des coloris au shampooing

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Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	1
5 Apparatus and reagents	1
5.1 Testing frame	1
5.2 Auxiliary equipment	1
5.3 Shampoo solution	2
5.4 Adjacent fabrics	2
5.4.1 Textile floor coverings	2
5.4.2 Yarns or loose fibres	2
5.4.3 Tufts	2
5.5 Grey scales	2
6 Preparation of test specimens	3
6.1 General	3
6.2 Textile floor covering	3
6.3 Yarns	3
6.4 Loose fibres and tufts	3
7 Procedure	3
8 Test report	4
Bibliography	5

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Foreword

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The committee responsible for this document is ISO/TC 219, *Floor coverings*.

Textile floor coverings — Colour fastness to shampooing

1 Scope

This International Standard describes a method for determining the colour fastness of textile floor coverings and yarns, loose fibres and tufts extracted from textile floor coverings, to the action of a reference shampoo solution.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2424, *Textile floor coverings — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2424 apply.

4 Principle

A specimen of a textile floor covering, yarn, loose fibre or tuft, in contact with specified adjacent fabrics, is immersed under pressure in a shampoo solution buffered to a pH of $(7,5 \pm 0,2)$. The specimen and the adjacent fabric are dried separately. The change in colour of the specimen and the staining of the adjacent fabrics are assessed using the grey scales.

5 Apparatus and reagents

5.1 Testing frame

The device consists of a stainless steel frame into which a mass of 5 kg with a base of 60 mm × 115 mm fits closely so that a pressure of 12,5 kPa can be applied on test specimens (40 mm × 100 mm), placed between glass or acrylic resin plates. If the mass is removed during the test, the testing device shall be constructed so that the pressure of 12,5 kPa remains unchanged.

Other devices may be used provided that the same results are obtained as with the apparatus described in [Clause 5](#).

5.2 Auxiliary equipment

- Flat-bottomed dish, approximately 150 mm × 150 mm × 50 mm;
- Smooth glass or clear acrylic resin plates, approximately 115 mm × 60 mm × 3 mm;
- Mass of 5 kg with a base of 60 mm × 115 mm;
- pH meter with an accuracy of 0,02 units;
- Oven, maintained at (40 ± 2) °C.

5.3 Shampoo solution

This solution is prepared by dissolving 1 g dodecyl sodium sulfate (CAS-number 15-121-3) and 0,2 g lauric mono-isopropanolamide (CAS-number 142-54-1) or 0,2 g coconut diethanolamide (CAS-number 68603-42-9) in 500 ml of deionized or distilled water. If necessary the solution is heated to ensure dissolution of the surfactant. Cool to a temperature of about 30 °C.

Prepare a buffer solution by adding 14 ml of citric acid 0,5 mol/l (CAS-number 77-92-9) to 372 ml of a disodium hydrogen phosphate 0,5 mol/l (CAS-number 7558-79-4) solution.

Add the buffer solution to the surfactant solution and dilute to 1 l. If required; adjust the pH to $(7,5 \pm 0,2)$ using citric acid or sodium hydroxide (CAS-number 1310-73-2), as appropriate.

5.4 Adjacent fabrics

5.4.1 Textile floor coverings

When the test specimen is a textile floor covering, two adjacent fabrics (50 mm × 40 mm) shall be used, one made of the same fibre as in the specimen (or the predominant fibre in the case of blends) and the other one made of the fibre as indicated in the second column of [Table 1](#). If the staining of further fibres is of interest, two or more specimens shall be tested separately.

5.4.2 Yarns or loose fibres

When the test specimen is in the form of a yarn or loose fibre, two adjacent fabrics (100 mm × 40 mm) shall be used, one made of the same fibre as in the specimen (or the predominant fibre in the case of blends) and the other one made of the fibre as indicated in the second column of [Table 1](#). If the staining of further fibres is of interest, two or more specimens shall be tested separately.

5.4.3 Tufts

When the test specimen is in the form of tufts extracted from a textile floor covering, two adjacent fabrics (50 mm × 40 mm) shall be used, one made of cotton, to act solely as a support for the tufts, and the other one made of the same fibre as in the specimen (or the predominant fibre) in the case of blends, or any other fibre. If the staining of two or more fibres is of interest, two or more specimens shall be tested separately.

Table 1 — Adjacent fabrics

First piece	Second piece
Cotton	Wool
Wool	Cotton
Silk	Cotton
Linen	Cotton
Viscose	Wool
Acetate	Viscose
Polyamide	Wool or viscose
Polyester	Wool or cotton
Acrylic	Wool or cotton

5.5 Grey scales

Standardized grey scales for assessing change in colour and staining shall be used.

6 Preparation of test specimens

6.1 General

A test specimen is prepared in accordance with 6.2 to 6.4. A further original specimen is cut, kept and used as reference for comparison with the tested specimen.

6.2 Textile floor covering

Cut a specimen 100 mm × 40 mm from which any integral foam underlay has been removed, and cover the use-surface with two pieces of adjacent fabric to form a composite specimen.

6.3 Yarns

Sew a uniform layer of 0,4 g yarn in parallel 100 mm lengths to a side of one of the adjacent fabrics. Cover with the other piece and sew along the same edge to form a composite specimen.

6.4 Loose fibres and tufts

Comb and compress 0,4 g of the loose fibre or tufts into a uniform layer of 100 mm × 40 mm. Place this between the two pieces of adjacent and sew along two opposite sides to form a composite specimen.

7 Procedure

Place the composite specimen in the flat-bottomed dish. In the case of a tuft composite specimen, the composite specimen should be placed in the dish with the cotton fabric side facing downward on the inside bottom surface.

Pour sufficient shampoo solution at a temperature of (37 ± 2) °C over the composite specimen to give a liquor-to-goods ratio of at least 10:1 ensuring thorough wetting of the composite specimen. Cover the composite specimen with a smooth glass or clear acrylic resin plate. Press the plate with the fingers to remove air bubbles and place the 5 kg mass on top of the plate.

Allow the dish to stand in an oven at (37 ± 2) °C for 15 min. Remove the mass and pour off the shampoo solution, leaving the plate on the composite specimen intact in the dish.

Proceed by either

- a) placing an assembly consisting of the composite specimen between two glass or clear acrylic resin plates under a pressure of 12,5 kPa in the testing frame preheated to (37 ± 2) °C, and placing the apparatus containing the assembly horizontally in the oven at (37 ± 2) °C for 1,5 h, or
- b) replacing the weight-piece and allow the dish to stand at (37 ± 2) °C for a further 1,5 h.

Separate the specimen from the adjacent fabrics, hydro-extract them to remove excess liquor and dry them apart in air at a temperature not exceeding 60 °C.

Assess the change in colour of the specimen and the staining of the adjacent fabrics with reference to the original specimen and the original adjacent fabrics, respectively, by comparison with the grey scale. When tufts are tested, the staining of the cotton support shall not be assessed.

Before assessing the test specimen for change in colour, it is recommended that pile lay orientation of the test specimen be restored so that it resembles exactly that of the original specimen.

8 Test report

The test report shall contain the following information:

- a) a reference to this International Standard, i.e. ISO 18168;
- b) all details necessary for the identification of the sample tested;
- c) the numerical ratings for the change in colour of the test specimen and for the staining of each kind of adjacent fabric used;
- d) any deviation, by agreement or otherwise, from the procedure specified.

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