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Textiles - Test for colour fastness - Colour fastness to breast milk

纺织品 色牢度试验 耐母乳色牢度

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1 Scope

This document describes a test method for determining the colour fastness of textiles to artificial breast milk.

This document applies to various textile products.

2 Normative references

The following documents contain the provisions which, through normative reference in this document, constitute the essential provisions of this document. For the dated referenced documents, only the versions with the indicated dates are applicable to this document; for the undated referenced documents, only the latest version (including all the amendments) is applicable to this document.

GB/T 250 Textiles - Tests for colour fastness - Grey scale for assessing change in colour

GB/T 251 Textiles - Tests for colour fastness - Grey scale for assessing staining

GB/T 6151 Textiles - Tests for colour fastness - General principles of testing

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 7568.1 Textiles - Tests for colour fastness - Specification for wool adjacent fabric

GB/T 7568.2 Textiles - Tests for colour fastness - Standard adjacent fabrics - Part 2：Cotton and viscose

GB/T 7568.3 Textiles - Tests for colour fastness - Standard adjacent fabrics - Part 3：Polyamide

GB/T 7568.4 Textiles - Tests for colour fastness - Specification for polyester adjacent fabric

GB/T 7568.5 Textiles - Tests for colour fastness - Specification for acrylic adjacent fabric

If the size of the combined sample is not (40±2) mm × (100±2) mm, the nominal pressure applied by the selected heavy hammer to the sample shall be (12.5±0.9) kPa.

Other devices that achieve the same results can be used.

5.2 Incubator: It can keep the temperature at (37±2) ℃.

5.3 Balance: It shall be accurate to 0.001 g.

5.4 Mechanical stirrer: The minimum speed shall be 1000 r/min.

5.5 Heating device: It can maintain the temperature at (37±2) ℃, such as a water bath.

5.6 Corrosion-resistant flat-bottom containers.

5.7 A set of 11 glass or acrylic plates.

5.8 Grey scale for evaluating discoloration: It shall be in accordance with the provisions of GB/T 250.

5.9 Grey scale for evaluating staining: It shall be in accordance with the provisions of GB/T 251.

5.10 Spectrophotometer for evaluating discoloration and staining: It shall comply with the provisions of GB/T 32598 and GB/T 32616.

6 Reagents and materials

6.1 Artificial breast milk test solution

The reagents used shall be chemically pure and prepared just before use. The proportions of components in the artificial breast milk test solution are as follows:

Whey Protein Powder (CAS No.: 84082-51-9)	1.0 g
Oleic acid (CAS number: 112-80-1, density 0.89 g/mL)	3.0 g (3.4 mL)
Lactose (CAS No: 63-42-3)	7.5 g
Grade III water (meets the requirements of GB/T 6682)	85.0 g
Potassium chloride	0.10 g
Calcium chloride	0.07 g
Sodium chloride	0.03 g

When preparing the artificial breast milk test solution, in order to fully dissolve the substances, it is advisable to use a mechanical stirrer (5.4) and a heating device (5.5) to heat the solution [the temperature should be (37±2) °C] then to accelerate the dissolution.

the other half and exchange their positions before placing them on the reverse side of the sample; then, sew them along two short edges. If one sample cannot contain all the colors, multiple combined samples shall be taken to contain all the colors. For fabrics with different colors on both sides or with film on one side, refer to printed fabrics to process adjacent fabrics.

7.2 For the yarn or loose fiber sample, the mass of the yarn or loose fiber shall be approximately equal to half of the total mass of the adjacent fabric; prepare a combined sample according to one of the following methods.

a) Sandwich the sample between a piece of (100±2) mm × (40±2) mm multi-fiber adjacent fabric and a piece of (100±2) mm × (40±2) mm fabric that is difficult to dye (6.2.3), and sew them along the four sides (according to the provisions of GB/T 6151) to form a combined sample.

b) Sandwich the sample between two pieces of (100±2) mm × (40±2) mm specified single-fiber adjacent fabrics, and sew them along the four sides to form a combined sample.

8 Operating procedures

8.1 Use a balance (5.3) to measure the mass of a prepared combined sample (see 7.1), and the unit shall be gram, in order to make the liquor ratio accurate. Place the weighed combined sample flat in a corrosion-resistant flat-bottom container (5.6), and inject the artificial breast milk test solution to make it completely wet; the bath ratio shall be 50:1. Keep the combined sample at room temperature (25±5) ℃ for 30 min, press and move it from time to time to ensure that the test solution penetrates into the sample fully and evenly. When the standing time is reached, remove the sample from the test solution, and use a suitable method (such as two glass rods) to squeeze out the excess test solution on the combined sample.

Place the combined sample flat between two glass or acrylic resin plates (5.7), put it in the test device (5.1) that has been preheated to the test temperature, and make it be subjected to a nominal pressure of (12.5±0.9) kPa.

Note: Each test device can support up to 10 combined samples for testing at the same time, and each sample is separated by a plate (11 plates in total). If there are less than 10 samples, 11 plates shall be still used to keep the nominal pressure unchanged.

8.2 Put the test device (5.1) with the combined sample into the incubator (5.2), and keep it at (37±2) ℃ for 4 hours; place the combined sample horizontally (Figure 1) or vertically (Figure 2) according to the type of the test device.

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