ICS 59.080.30
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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 42698-2023

Textiles - Testing and evaluation for anti-seeing-through property

纺织品 防透视性能的检测和评价

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1 Scope

GB/T 42698-2023 measures how much a fabric can be seen through. It is a property consumers judge instantly and manufacturers have had no agreed way to state: light clothing, sportswear and uniforms are routinely returned or criticised for being transparent under strong light or when stretched, and a claim of opacity on a label has until now meant whatever the supplier intended it to mean. The difficulty is that the perception depends on the fabric's construction, its colour, the lighting and the background behind it, so an instrumental method has to fix those conditions before a number can be compared with another number. This document describes methods for testing and evaluating the anti-seeing-through property of textiles, giving both the test procedure and the evaluation that turns the measurement into a stated grade. It applies to all kinds of fabrics and their products. Under ICS 59.080.30, it is written for fabric manufacturers and garment brands who want to specify opacity rather than argue about it, for testing laboratories, and for the institutional buyers of uniforms and workwear for whom it is a requirement rather than a preference.

This document describes methods for testing and evaluating the anti-seeing-through property of textiles. This document is applicable to all kinds of fabrics and their 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 251 Textiles - Tests for colour fastness - Grey scale for assessing staining

GB/T 3978 Standard illuminants and geometric conditions

GB/T 6529 Textiles - Standard atmospheres for conditioning and testing

GB/T 9086 The white standard plate for colorimetry and photometry

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 anti-seeing-through property The property of a fabric that makes the fabric covering part cannot or is not easy to be observed clearly by the outside due to the vision being blocked, when visible light is irradiated.

3.2 lightness The characteristic of an object's surface that is relative to brightness and darkness. Under the same lighting conditions, the scale that is given to the visual perception characteristics of the surface of the object and based on the whiteboard. One of the three attributes of color. [Source: GB/T 5698-2001, 5.8]

3.3 anti-seeing-through index It is to characterize the degree of anti-seeing-through property, the ratio of the lightness values measured when the sample is backed with a blackboard and a whiteboard. NOTE: The larger the ratio, the better the anti-seeing-through property of the sample.

4 Principles

4.1 Method A (instrumental method) Under the specified test conditions, a colorimeter is used to measure the lightness values when the sample is backed with a blackboard and a whiteboard, and then the anti- seeing-through index is calculated to represent the anti-seeing-through property.

4.2 Method B (visual inspection method) Under the specified test conditions, the grey scale for staining evaluation is used to rate the color difference between the blackboard part covered by the sample and the whiteboard part covered by the sample, and the grades are used to characterize the anti- seeing-through property.

5 Instruments and materials

5.1 Colorimeter Illumination conditions with standard illuminant D65, CIE 10° observer, and measurement geometric conditions shall comply with the provisions of GB/T 3978; specular component excluded, the wavelength range is at least 400 nm~700 nm, and the wavelength interval is 5 nm; other wavelength intervals shall be indicated in the report. The recommended diameter range of the test hole is 1 cm~3 cm.

5.2 Whiteboard The whiteboard used for the colorimeter calibration and the test shall comply with the provisions of GB/T 9086. There is a uniform white layer on the surface. Under the conditions of D65 standard light source, CIE 10° observer, and specular component excluded, the measured lightness value L is above 90, and the side length of a square is not less than 45 mm or the diameter of a circle is not less than 25 mm. fluorescence first.

8.1.2 Attach the back of the sample flatly to the whiteboard (5.2), let the front of the sample face the test hole of the colorimeter, keep the warp or vertical direction upward, and measure the lightness value Lw.

8.1.3 Attach the back of the sample flatly to the blackboard (5.3), let the front of the sample face the test hole of the colorimeter, keep the warp or vertical direction upward, and measure the lightness value Lb.

8.1.4 Test the rest of the samples according to the steps

8.1.2 and 8.1.3.

8.2 Method B (visual inspection method)

8.2.1 In the standard light source box (5.4), place the whiteboard (5.2) and the blackboard (5.3) side by side on the same plane, forming an angle of about 45° with the incident light.

8.2.2 Cover the sample on the blackboard and whiteboard, and the back of the sample shall be flatly attached to the blackboard and whiteboard, with the warp or vertical direction upward.

8.2.3 The observation direction is roughly perpendicular to the surface of the sample, and the observation distance is about 30 cm. Use the grey scale for assessing staining (5.5) to evaluate the color difference between the part of the blackboard covered by the sample and the part of the whiteboard covered by the sample.

8.2.4 Test the rest of the samples according to the steps

8.2.2 and 8.2.3.