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Textiles - Tests for colour fastness - Instrumental assessment of change in colour for determination of grey scale rating

(ISO 105-A05:1996, Textiles - Tests for colour fastness - Part A05: Instrumental assessment of change in colour for determination of grey scale rating, MOD)

纺织品 色牢度试验 试样变色的仪器评级方法

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Textiles - Tests for colour fastness - Instrumental assessment of change in colour for determination of grey scale rating

1 Scope

This Standard specifies the instrumental assessment of change in colour for determination of grey scale rating of test sample relative to untested sample, as well as the calculation method that converts the instrument measured value to the number of grey sample card level used for colour change.

This Standard is applicable to the rating of colour fastness test for various fabrics.

NOTE: Due to the fluorescence and/or other factors, there may be a difference between the instrument rating and the visual rating of the sample.

2 Normative references

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

GB/T 3978, *Standard illuminants and geometric conditions*

GB/T 8424.3, *Textiles - Tests for colour fastness - Calculation of colour differences* (GB/T 8424.3-2001, eqv ISO 105-J03:1995)

3 Principle

Use an instrument to measure the colour of the sample that has been subject to the colour fastness test and the colour of the same sample that has not been subject to the colour fastness test. Determine the CIELAB coordinate values of the brightness L*, chroma C^*_{ab} and hue h_{ab} of the two samples. Calculate the CIELAB difference of ΔL^*, ΔC^*_{ab} and ΔH^*_{ab}. Convert to the number of grey sample card level through formulas.

4 Instruments

4.1 Spectrophotometer or colorimeter: at least meet any measurement geometry specified in 6.1 of GB/T 3978-2008.

5 Sample

Select a sample that has been subject to the colour fastness test and is representative. Its size can meet the clamping requirements of the instrument, without obvious flaws. On the back of the single layer sample, pad a white material that does not contain fluorescent whitening agents and is opaque. On the backs of the sample and the reference sample, same materials shall be padded.

NOTE: It may also pad several layers of the same untreated sample on the back of the sample, so as to make the sample opaque.

6 Operating procedures

6.1 Cut a reference sample from the sample that has not been subject to the colour fastness test. The thickness and number of layers shall be the same as the sample (Clause 5). Mount the reference sample on the sample holder. And use the instrument (4.1) to measure its colour value. Through the measuring system, use CIE illuminator D65 and 10° observer to obtain CIE tristimulus value. Then according to the provisions of GB/T 8424.3, use the obtained data to calculate CIELABL*, C^*_{ab} and h_{ab} values.

NOTE: Other illuminant and observer conditions that can be used for measurements are: D65/2°, A/2°, A/10°.

6.2 Use the same method to measure the colour of the sample (Clause 5). Calculate CIELABL*, C^*_{ab} and h_{ab} values.

7 Calculation of colour change

7.1 Based on the measured data (6.1, 6.2), calculate the brightness difference ΔL*, chroma difference ΔC^*_{ab} and hue difference ΔH^*_{ab} between the reference sample and the sample.

7.2 Use the following formulas to calculate the change of the colour ΔE_F :

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