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GB/T 18830-2009

Replacing GB/T 18830-2002

Textiles - Evaluation for solar ultraviolet radiation protective properties

纺织品 防紫外线性能的评定

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Standardization Administration of the PRC.

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Foreword

The standard replaces GB/T 18830-2002 “Textiles - Evaluation for solar ultraviolet radiation protective properties”.

As compared with GB/T 18830-2002, the main technical differences are as follows:

- MODIFY the Chapter 8 “Calculation and result presentation”, ADD the equation (4), (5), and (6);

- MODIFY the assessment indicators of UV protection products from “UPF > 30” to “UPF > 40”.

Appendix A of this standard is a normative appendix.

This standard was proposed by the China Textile Industry Association.

This standard shall be under the jurisdiction of the National Textile Standardization Technical Committee Basic Standard Branch (SAC/TC 209 /SC 1).

The main drafting organizations of this standard: Hangzhou Paradise Umbrella Group Co., Ltd., Textile Industry Standardization Institute.

The main drafters of this standard: Xu Lu, Zheng Yuying, Wang Qiwei, He Lingjun, Zhao Chungui.

This Standard replaces the standard previously issued as follows:

- GB/T 18830-2002.

Textiles - Evaluation for solar ultraviolet radiation protective properties

1 Scope

This standard specifies the test method for the solar UV radiation protective properties of textiles, as well as the presentation, evaluation and marking of the level of protection.

This standard applies to the assessment of the solar UV radiation protective properties of textiles under the specified conditions.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 6529 Textiles - Standard atmospheres for conditioning and testing (GB/T 6529-2008, ISO 139:2005, MOD)

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1

Solar ultraviolet radiation, UVR

It refers to the electromagnetic radiation at a wavelength of 280 nm ~ 400 nm.

3.2

Solar UV-A

It refers to the solar ultraviolet radiation at a wavelength of 315 nm ~ 400 nm.

Integrating sphere

It is a hollow ball, AND its inner surface is a non-selective diffuse reflector.

3.10

Fluorescence

It refers to the optical radiation which absorbs radiation of a specific wavelength AND re-emits a relatively large wavelength in a short time.

3.11

Spectral bandwidth

It refers to the width between the half-peaks of the optical radiation intensity as produced by monochromatic light, expressed in nanometers (nm).

4 Principles

USE the monochromatic or multicolored UV-rays to collect the total spectral transmittance ray, determine the total spectral transmittance, AND calculate the UV protection factor UPF value of the sample.

It may use a parallel beam to irradiate the test specimen, AND use a integrating sphere to collect all the transmitted light; it may also use the light hemispheres to irradiate the test specimen, AND collect the parallel transmitted light.

5 Instrument

5.1 UV light source

PROVIDE the UV radiation at a wavelength of 290 nm ~ 400 nm. Suitable UV light sources include xenon arc lamps, deuterium lamps, and daylight simulators.

In the case of using a parallel incident light beam, the end face of the beam shall be at least 25 mm^2 AND the coverage shall be at least 3 times the fabric loop configuration. In addition, as for monochromatic incident beams, the ratio of the minimum size of the integrating sphere entrance to the maximum size of the illumination spot shall be greater than 1.5. The beam shall be perpendicular to the surface of the fabric, between ± 5°, AND the angle of divergence between the beam and the beam axis shall be less than 5°.

5.2 Integrating sphere

The total pore area of the integrating sphere does not exceed 10% of the inner surface area of the integrating sphere. The inner surface shall be coated with a highly reflective matte material such as barium sulfate. Inside the integrating sphere is also equipped with a baffle to block the light from the test specimen window to the internal probe OR the light from the test specimen window to the internal light source.

5.3 Monochromator

It is suitable for the measurement of the spectral bandwidth of 5 nm or less in the wavelength range of 290 nm ~ 400 nm.

5.4 UV transmission filter

It only allows the transmission of the light less than 400nm AND there is no fluorescence.

If the monochromator is installed prior to the sample, it shall place a suitable UV transmission filter between the sample and the detector. If this is not possible, PLACE the filter on the test specimen window between the test specimen and the integrating sphere. The thickness of the UV transmission filter shall be between 1 mm ~ 3 mm.

5.5 Test specimen holder

It is used to make the test specimen maintain flat in tension-free state OR pre-tensioned state. This device shall not block the entrance of the integrating sphere.

6 Preparation and conditioning of test specimen

6.1 Preparation of test specimens

For homogeneous material, it shall take at least 4 representative test specimens AND it shall discard the fabrics within 5 cm to the fabric edge.

For nonhomogeneous materials with different color or structure, at least two test specimens shall be tested for each color and each structure.

The size of the test specimen shall be sufficient to cover the bore of the instrument.

6.2 Test conditioning

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