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GB/T 18319-2019

Replacing GB/T 18319-2001

Textiles - Test method for solar heat storage property

纺织品 光蓄热性能试验方法

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Standardization Administration of the People's Republic of China.

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 18319-2001, *Textiles - Testing method for thermal retention with accumulated by infrared ray*; compared with GB/T 18319-2001, the main technical changes are as follow:

-- Modify the test principle; expand the light irradiation band from the infrared band to various bands of simulated sunlight; modify the light source to a xenon arc lamp; change the test indicators to the maximum temperature rise, average temperature rise and test end temperature rise (See Chapter 4);

-- Modify the sample size and quantity (see Chapter 7), test steps (see Chapter 8) and result calculation and expression (see Chapter 9).

Please note that some of the contents of this document may involve patents. The issuing organization of this document is not responsible for identifying these patents.

This Standard was proposed by China National Textile and Apparel Council.

This Standard shall be under the jurisdiction of National Technical Committee on Textiles of Standardization Administration of China (SAC/TC 209).

Drafting organizations of this Standard: Shanghai Entry-Exit Inspection and Quarantine Bureau Industrial Products and Raw Materials Testing Technology Center, Lianrunxiang (Qingdao) Textile Technology Co., Ltd., Nantong Hongda Experiment Instruments Co., Ltd., Xiamen Donglun Co., Ltd., Huafa Technology Co., Ltd., Chinatesta Textile Testing & Certification Services Co., Ltd., Zhongfangbiao (Shenzhen) Inspection & Testing Co., Ltd.

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The previous version – replaced by this Standard – of the standard is:

-- GB/T 18319-2001.

Textiles - Test method for solar heat storage property

1 Scope

This Standard specifies the test method for solar heat storage property of textiles.

This Standard applies to all types of textile products. Fibers and yarns can be made into sheets and then implemented as a reference.

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 6529, Textiles - Standard atmospheres for conditioning and testing

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

solar heat storage property

Property that textiles absorb sunlight from the environment, convert it into heat energy, and maintain it for a period of time to increase the temperature.

3.2

irradiance

Radiant power incident on unit surface area.

Note: The unit is watts per square meter (W/m^2).

4 Principle

Use a xenon arc lamp as the irradiation light source. Place the sample under a certain irradiation intensity, and the temperature of the sample changes due to absorption of light energy. Use a temperature sensor to test the temperature of the sample; record the temperature change of the sample at every point-in-time after 10 minutes of irradiation and 10 minutes of turning off the light source; calculate the maximum temperature rise

4 – temperature recorder;

5 – temperature sensor 1;

6 – temperature sensor 2;

7 – sample pressing frame.

Figure 1 – Example of structural diagram of solar heat storage tester

6 Sample humidity control and environmental requirements

Perform humidifying in accordance with the standard atmospheric temperature and humidity environment and procedures specified in GB/T 6529, and carry out the test, where no other thermal radiation sources that may affect it exist indoors.

7 Sample preparation

The sample shall be representative. Cut at least three test pieces from each sample. The size of each test piece shall be at least 180 mm × 180 mm. If there are areas with large differences in structure, color, etc. (including spliced components in the product) in the sample, it is advisable to sample each area separately if possible. For fibers and yarns, sheet test pieces can be made for testing.

8 Test steps

Warning – Xenon arc light is harmful to eyes. Proper protective measures should be taken during testing.

8.1 Turn on the xenon arc lamp of the tester and preheat it for 5 minutes. Use an irradiance meter to test the irradiance at the center of the sample table and adjust the irradiance to (400 ± 10) W/m^2; then, turn off the xenon arc lamp and let the test table cool to ambient temperature.

8.2 Place the sample in the center on the sample table with the front side of the sample facing up; then, use the sample pressing frame to fix the sample, to ensure that the sample is in full contact with temperature sensor 1.

8.3 Turn on the xenon arc lamp, and the temperature recorder will automatically record the temperature changes of the sample and the environment at least every 1 minute. After the illumination lasts for 10 minutes, turn off the xenon arc lamp, and continue to record the temperature changes of the sample and the environment within 10 minutes.

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