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GB/T 46396-2025

**Requirements and test methods of thermal insulating
performance of home textiles**

家用纺织品保暖性能要求与测试方法

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Table of Contents

1	Scope
2	Normative references
3	Terms and Definitions
4	Thermal insulation performance requirements
5	Test Methods
5.1	Method 1 (Hot Plate Method)
5.1.2	Sample Preparation
13	Reference

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China National Textile and Apparel Council. This document is under the jurisdiction of the National Technical Committee on Standardization of Home Textiles (SAC/TC302). This document was drafted by: Luolai Lifestyle Technology Co., Ltd., Suzhou University, Nantong Fiber Inspection Institute, and Wuxi Vans Home Furnishings Technology Co., Ltd. Limited Liability Company, Jiangsu Provincial Textile Product Quality Supervision and Inspection Institute, Kaisheng Home Textiles Co., Ltd., and Ziluolan Home Textiles Technology Co., Ltd. The company, Hebei Guoxin Pure Cotton Home Textiles Co., Ltd., Donghua University, Ningbo Boyang Home Textiles Group Co., Ltd., and Hunan Mengjie Home Textiles Co., Ltd. Company, Hangzhou Guoyue Textile Co., Ltd., Qingdao Shangya Home Furnishings Co., Ltd., Jixiang Sanbao High-Tech Textile Co., Ltd., Shanghai Zhenaosheng Biotechnology Co., Ltd., Jiangsu Kangyichen Life Technology Co., Ltd., Nanjing Municipal Institute of Product Quality Supervision and Inspection, and Shandao Technology Development (Guangdong) Co., Ltd. Limited Liability Company, Shandong Jinhao Home Textiles Group Co., Ltd., Shanghai Mercury Home Textiles Co., Ltd., Shanghai Luozhong Technology Development Co., Ltd. Laizhou Electronic Instruments Co., Ltd., Wenzhou Darong Textile Instruments Co., Ltd., Zhejiang Norker Sporting Goods Co., Ltd., Zhongshan Quanyi Outdoor Products Technology Co., Ltd. The main drafters of this document are. Xue Jiachen, Lu Yehu, Qian Weiwei, Yang Yufang, Zhang Tong, Yang Xu, Huang Lingbin, Ge Ling, Gu Hong, Wang Fumei, and Zhang Qiuying. Liu Hui, Wu Minwei, Wang Yanpeng,

Zhang Li, Feng Lian, Huang Huibiao, Zhang Yujie, Wu Ningxi, Wang Minjun, Wu Zhongping, Wang Rong, Li Meng, Zhang Mengsheng, Wang Weize Zheng Jianquan. Requirements and Test Methods for the Thermal Insulation Performance of Home Textiles

1 Scope

GB/T 46396-2025 is the Chinese national standard covering how warm a quilt or a blanket actually is - the thermal resistance measured on a guarded hot plate or a thermal manikin, the effect of the filling distribution and of compression, the moisture, and the grades a product may be sold under. First edition, under the China National Textile and Apparel Council. In force from 1 May 2026. Issued on 5 October 2025, it has been in force since 1 May 2026.

This document specifies the requirements for the thermal insulation performance of home textiles, describes the test methods for the thermal insulation performance of home textiles, and provides labeling information. Note the information in the content. This document applies to the quality control and evaluation of the thermal insulation performance of planar household textiles.

Note. Flat home textiles typically refer to quilts, comforters, blankets, or other similar products.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 6529 Standard Atmosphere for Conditioning and Testing of Textiles

GB/T 8170 Rules for rounding off numerical values and the representation and determination of limiting values

ISO 15831 Method for determining the thermal resistance of clothing based on a thermal mannequin.

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 thermal resistance R_{ct} The ratio of the temperature difference between the two sides of the sample to the heat flow per unit area passing perpendicularly through the sample. Note

1. This heat flow may include one or more of the following forms. conduction, convection,

and radiation. Note

2. Thermal resistance is expressed in square meter Kelvin per watt ($\text{m}^2 \cdot \text{K/W}$). [Source: GB/T 11048-2018, 2.1, with modifications]

3.2 Thermal resistance is determined by the heat transfer properties of the sample material itself.

3.3 When using flat, overlay-type home textiles on the human body, the overall thermal insulation performance of all materials, including the overlay sample, pillow, and mattress, is considered. Thermal resistance.

3.4 thermalmanikin Used to measure heat transfer under steady-state conditions through a sample of planar household textiles, simulating the human body shape and heat generation. Model. [Source: GB/T 38426-2019, 3.5, with modifications]

3.5 The lower limit of the temperature at which a user can maintain thermal balance when using a flat, covering home textile when relaxed.

Note. The relaxed state usually refers to the state of lying flat and resting.

4. Thermal insulation performance requirements Thermal insulation performance is classified into five levels based on its inherent thermal resistance (protective heat plate method) or combined thermal resistance (warm body dummy method), with level one being the lowest and level five being the highest. High. The thermal resistance values for each grade should meet the requirements of Table

1. The inherent thermal resistance and the overall thermal resistance are equivalent; satisfying either one is sufficient. Table

1 Thermal Insulation Performance Requirements The unit is square meters Kelvin per watt Warmth rating Thermal resistance R_{ct} Inherent thermal resistance (protective hot plate method) Combined thermal resistance (warm body dummy method) Level 5 ≥ 1.20 $\geq$

0.80 Level 4. ≥ 0.90 , < 1.20 ; ≥ 0.76 , $<$

0.80 Level 3. ≥ 0.75 , < 0.90 ; ≥ 0.72 , $<$

5.1 Method 1 (Hot Plate Method)

5.1.1 Test Principle The test sample is covered on a test plate at a constant temperature, and the air layer above the sample maintains a constant relative humidity and temperature. Measure the surface temperature of the hot plate, the air layer temperature, and the heat flow per unit area perpendicular to the sample, and calculate the thermal resistance of the sample.

5.1.2 Sample Preparation

5.1.2.1 Prepare the specimens in the following manner.

- a) The test shall be conducted using a whole specimen. To ensure the reliability of the test data, the area of the specimen shall not be less than 1200mm x 1600mm;
- b) Remove the sample from the packaging, and have two people grasp the sample from both ends by the two corners and gently shake it;
- c) If the sample is filled with loose fibers (not flakes), the distribution of the filler in each compartment should be carefully checked after the sample is laid flat to ensure that... Evenly distributed to achieve a naturally fluffy state;
- d) Suspend or lay the specimen flat, ensuring at least 25 cm of free air space on the surface of the specimen. Suspension may affect the filling material in the specimen. If it is balanced, it should be placed horizontally.

5.1.2.2 Condition the sample in the standard atmosphere specified in GB/T 6529 until it reaches equilibrium.

5.1.3 Equipment The apparatus for measuring thermal resistance using the protective hot plate method shall comply with the provisions of Appendix A.