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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 46400-2025

**Textiles - Determination of pore size characteristics - Gas-liquid
replacement method**

纺织品 孔径特征的测定 气液置换法

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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 Textiles (SAC/TC209). This document was drafted by: Guangzhou Inspection & Testing Certification Group Co., Ltd., Zhejiang Huaji Environmental Protection Technology Co., Ltd., and Yuyue Home Textiles Co., Ltd. Company, Xiamen Zhongchuang Environmental Protection Technology Co., Ltd., Shandong Taipeng Environmental Protection Materials Co., Ltd., Dongying Junfu Purification Technology Co., Ltd. Huahao Nonwoven Fabric Co., Ltd., Xinxing Jihua (Beijing) Materials Technology Research Institute Co., Ltd., Zhuji Maya Electrical Machinery Co., Ltd., Shandong Hai Ausbio Biotechnology Co., Ltd., Beijing Airotech Technology Co., Ltd., Dezhou Hongyu Composite Materials Technology Co., Ltd., Donghua University China Jiliang University, China Textile Standard Testing & Certification Co., Ltd., Soochow University, China Industrial Textiles Industry Association, and China United Inspection (Dongguan) Co., Ltd. Inspection Technology Co., Ltd. The main drafters of this document are. Liu Yuqing, Hu Huiqiang, Wang Daolong, Gao Hongguo, Zheng Zhihong, Huang Jingying, Wang Xuhua, Lin Yusen, Huang Wensheng, and Zhang Tianxiang. Yong Sikuan, Li Shiqiong, Zheng Jinwei, Liu Liu, Yan Ying, Zhu Ruitian, Chen Xinbao, Song Liguang, Zou Zongyong, Zhang Weifeng, Meng Xiangyu, Zhu Guoquan. Determination of Pore Size Characteristics of Textiles by Gas-Liquid Displacement Method

1 Scope

GB/T 46400-2025 is the Chinese national standard covering the pore size of a fabric by capillary flow porometry - the wetting liquid displaced by rising gas pressure, the bubble point that gives the largest pore, and the distribution derived from the wet and dry flow

curves, on filter media and barrier textiles. 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 describes a gas-liquid displacement method for determining the pore size characteristics (including maximum pore size, average pore size, and pore size distribution) of textiles. Experimental methods. This document applies to all types of fabrics; other materials should refer to this document for guidance.

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 5549 Determination of surface tension of surfactants by the liquid film pulling method

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

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 maximum pore size Apply gas pressure to one side of the fully wetted sample and measure the diameter of the first hole through which gas passes.

3.2 mean pore size The orifice diameter is calculated from the flow rate and instantaneous pressure values at the intersection of the semi-dry curve and the wet curve.

3.3 pore-sized distribution The percentage of a certain aperture range out of all apertures.

4.Principles The sample is thoroughly wetted with a wetting agent to fill the pores. Then, gas is slowly introduced into one side of the sample, with the gas pressure gradually increasing. The pressure gradually increases until the liquid in the connecting holes is drained. Liquid is drained sequentially from the largest to the smallest diameter holes. As the number of holes cleared increases, the flow... As the gas flow rate through the sample gradually increases, the maximum pore size and average flow rate of the sample are calculated based on the gas pressure when the pore is opened and the pressure-flow rate curve of the sample. Aperture and aperture distribution.

5 Instruments, tools and materials

5.1 Aperture characteristic tester, including air source (filtered compressed air or nitrogen),

pressure gauge, and flow meter. The maximum range of the pressure gauge is not less than... 400kPa, accuracy 2%. Flow metering range 0L/min~200L/min, accuracy 3%. See Figure 1 for a detailed schematic diagram of the equipment structure.

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