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

GB/T 45270-2025

**Man-made fibre - Test method for tensile properties of short-cut
fibre**

化学纤维超短纤维拉伸性能试验方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed and coordinated by the National Technical Committee on Standardization of Chemical Fibers (SAC/TC586). This document was drafted by: Suzhou Shengte Intelligent Technology Co., Ltd., Wuhan Textile University, Shanghai Textile Industry Technical Supervision Institute, Xinfengming Group Co., Ltd., Kaitai Special Fiber Technology Co., Ltd., China Chemical Fiber Industry Association, Anhui Product Quality Supervision and Inspection Institute, Changzhou Huafang Textile Instrument Co., Ltd., Jiangsu Textile Research Institute Co., Ltd., Taihe New Materials Group Co., Ltd., Jiangsu Shenhe Technology Development Co., Ltd., Tangshan Sanyou Group Xingda Chemical Fiber Co., Ltd., Shanghai Textile Group Testing Standards Co., Ltd., Tianjin Shaoxing Keqiao Research Institute of University of Technology, Jiangsu Tongkun Hengyang Chemical Fiber Co., Ltd., Ningbo Dafa New Materials Co., Ltd., Jiangsu New Vision Advanced Technology Co., Ltd. Energy Fiber Innovation Center Co., Ltd., Nanjing Chemical Fiber Co., Ltd., Hangzhou Benma Chemical Fiber Spinning Co., Ltd., Weifang Xinlong Biomaterials Co., Ltd. Co., Ltd., Chaomeis New Materials Co., Ltd., Longyou Longxian New Materials Co., Ltd., Xinxing Jihua (Beijing) Materials Technology Research Institute Co., Ltd. company. The main drafters of this document are. Ke Guizhen, Yang Haihua, Li Hongjie, Zhuang Yaozhong, Xu Zhiqiang, Li Deli, Ding Zhenhua, Sun Weiping, He Weixing, Zhu Xiaona, Jun-gu Guo, Song-mei Pang, Ruo-yao Ding, Cui-yu Yin, Yu-qin Zhang, Zhe-feng Ma, Jin-long Xu, Bin Yuan, Guo-liang Xu, Chang-lei Li, Gang Yang, Zi-li Chen, Wei-feng Zhang, Li Yimeng. Test method for tensile properties of chemical fiber ultra-short fibers

1 Scope

GB/T 45270-2025 gives the Chinese test method for the tensile properties of short-cut

man-made fibre. Short-cut fibres, a few millimetres long, are used as reinforcement in concrete, friction materials, paper, filtration media and composites, and their tensile strength and modulus determine what they contribute; but they cannot be tested by the ordinary single-fibre method, because a specimen a few millimetres long leaves no gauge length once it is gripped, and the gripping itself damages the fibre. The standard addresses that directly. It sets the principle, the apparatus including the gripping arrangement and the tensile tester requirements, the conditioning atmosphere, the selection and mounting of the specimens including the mounting tab technique that makes a short gauge length possible, the determination of the linear density needed to convert force to specific stress, the test procedure and rate, the number of specimens, the calculation of the breaking strength, elongation and modulus, the treatment of invalid breaks at the grips, and the precision and report. It takes effect on 1 September 2025.

This document describes the test method for the tensile properties of man-made staple fibers. This document is applicable to polyester, meta-aramid, para-aramid, high-strength and high-modulus polyvinyl alcohol, polylactic acid, viscose with a length of 5mm~20mm. Rubber, lyocell ultra-short fibers, and other ultra-short fibers can be used for reference.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 4146 (all parts) Textiles - Chemical Fibers

GB/T 9994 Standard moisture regain of textile materials

GB/T 14334 Sampling method for chemical staple fibers

GB/T 14337 Test method for tensile properties of chemical staple fibers

3 Terms and definitions

GB/T 4146 (all parts) and the following terms and definitions apply to this document.

3.1 Offline sample making platform Specially used for sample preparation of ultra-short single fiber tensile property test samples.

3.2 Jig A tool that assists in controlling the position of the sample preparation platform, with one end connected to the stretching system and the other end connected to the force acquisition system.

4 General requirements

4.1 Sampling It shall be implemented in accordance with the provisions of GB/T 14334.

4.2 Pre-humidification, humidity conditioning, standard atmosphere for testing, and humidity conditioning time

4.2.1 Pre-humidification The sample should be pre-humidified when it meets one of the following conditions.

- The moisture regain of the sample exceeds the specified moisture regain;
- The sample is in an atmosphere with a relative humidity higher than the upper limit of the relative humidity in the laboratory;
- The sample temperature is 5°C lower than the laboratory temperature.