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

GB/T 45271-2025

**Determination of catechin content in catechin-modified fibres
by HPLC**

化学纤维 儿茶素含量的测定 高效液相色谱法

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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: China Textile Research Institute (Qingdao) Co., Ltd., Zhejiang Semir Garment Co., Ltd., 361° (China) Co., Ltd., Taicang Qihua Knitwear Co., Ltd., Xiamen Jordan Technology Co., Ltd., Xiamen Xtep Children's Products Co., Ltd., China National Chemical Corporation Fiber Industry Association, Biyue (Beijing) Technology Co., Ltd., Shanghai Textile Industry Technical Supervision Institute, Pepsi-Based Materials (Qingdao) Co., Ltd. Company, Xinfengming Group Co., Ltd., Shandong Zhuobi Maternal and Infant Products Co., Ltd., Wuxi Jintong High Fiber Co., Ltd., Zhejiang Xierke Technology Co., Ltd., Shanghai Textile Group Testing Standards Co., Ltd., Heye Health Technology Co., Ltd., Zhejiang Hengchuang Advanced Functional Fiber Innovation Center Co., Ltd., Qianzhiya (Hubei) Hygiene Products Co., Ltd., Kaitai Special Fiber Technology Co., Ltd., Butong Internet of Things Technology (Shanghai) Co., Ltd. Co., Ltd., Alaer Fiber Inspection Institute, Aiduo Nursing (Zhejiang) Co., Ltd., Ningbo Dafa New Materials Co., Ltd., Qingdao Baicao New Materials Co., Ltd., Jiangsu Qinzun Textile Technology Co., Ltd. The main drafters of this document are. Huang Xiaohua, Chi Shan, Hu Jun, Wei Shutao, Hua Xiaomei, Ruan Guoqing, Zhi Jun, Zhang Zixin, Chen Min, Li Hongjie, Zhang Yan, Huang Yuping, Wang Xishan, Qian Qiyuan, Yang Chi, Chen Yan, Fang Yanwen, Lu Haimei, Ma Feiyue, Yuan Conghui, Fang Yu, Yuan Zhixia, Zhang Dong, Gu Jun, Liu Yanming, Liu Cui, Liu Aonan. Determination of catechin content in chemical fiber High performance liquid chromatography WARNING. Personnel using this

document should have practical experience in formal laboratory work. This document does not address all possible safety issues. The user is responsible for taking appropriate safety and health measures and ensuring compliance with the conditions stipulated by relevant national laws and regulations.

1 Scope

China's national method for determining catechin content in catechin-modified fibres by high performance liquid chromatography. Catechins are the polyphenols of green tea, and textiles incorporating them are sold on claims of antioxidant and antibacterial function, deodorising performance and a general association with health that carries real weight in the Chinese market. The claim needs a number behind it, for the same reason as any functional textile: what was added at the spinning dope is not what remains in the finished fibre. Catechins are heat sensitive and readily oxidised, and melt spinning takes polyester past 280 degrees C, so the surviving fraction is the only fraction that matters. HPLC separates the individual catechins and quantifies them, which also distinguishes intact compound from the oxidation products that a total polyphenol assay would count. The method applies to catechin-modified viscose, polyester, nylon and other chemical fibres.

This document describes a test method for the determination of catechin content in catechin-modified fibers by high performance liquid chromatography. This document is applicable to catechin-modified viscose, polyester, nylon and other chemical fibers.

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 6504-2017 Test method for oil content of chemical fibers

GB/T 6682 Specifications and test methods for water used in analytical laboratories

3 Terms and definitions

The terms and definitions defined in GB/T 4146 (all parts) apply to this document.

4 Principle

The catechins in the fiber were extracted with methanol and analyzed qualitatively and quantitatively by high performance liquid chromatography and external standard method.

5 Reagents or materials

Unless otherwise specified, only reagents confirmed to be chromatographically pure and first-grade water that complies with the requirements of GB/T 6682 were used in the analysis.

5.1 Catechins standard substances/standard samples, purity $\geq 98\%$. Catechins standard substances/standard samples include. catechin (C), CAS No.. 154-23-4; epicatechin (EC), CAS No.. 490-46-0; epigallocatechin (EGC), CAS No.. 970-74-1; epicatechin Epigallocatechin gallate (ECG), CAS number. 1257-08-5; Epigallocatechin gallate (EGCG), CAS number. 989-51-5.

5.2 Methanol, formic acid, ammonium formate, acetonitrile.

6 Instruments and Equipment

6.1 High performance liquid chromatograph equipped with a diode array detector.

6.2 Analytical balance, graduation value

0.1 mg.