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

GB/T 44871-2024

Textiles - Determination of the diisocyanate compounds

纺织品 二异氰酸酯类化合物的测定

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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 is required. 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 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/TC 209). This document was drafted by: China Textile Standards (Shenzhen) Testing Co., Ltd., China Textile Standards Inspection and Certification Co., Ltd., Beijing Junyi Technology Co., Ltd. Company, China Textile Standard (Zhejiang) Testing Co., Ltd., Zhejiang Yaqinuo Decoration Materials Co., Ltd., Zhejiang Aiteli Auto Products Co., Ltd., Jia Geng Innovation Laboratory, Fuzhou Changle Fresh Flower Knitting Co., Ltd., and Guangdong Xinhuiwei Industrial Investment Co., Ltd. The main drafters of this document are: Li Xiang, Wang Shuai, Zhang Mo, Xie Tangtang, Ou Junhui, Zhuang Yijin, Lin Jinbin, Liu Zhao, Liang Yan, Liang Jiajun. Determination of diisocyanate compounds in textiles
Warning - Personnel using this document should have practical experience in formal laboratory work. This document does not indicate all possible safety The user is responsible for taking appropriate safety and health measures and ensuring that the conditions stipulated by relevant national laws and regulations are met.

1 Scope

GB/T 44871-2024 gives the Chinese method for determining diisocyanate compounds in textiles. Diisocyanates are respiratory sensitisers and are restricted in consumer articles; they reach textiles through polyurethane coatings, laminating adhesives, prints and elastane, where unreacted monomer can remain, and the analysis is awkward because the free isocyanate is reactive and does not survive an ordinary extraction. The standard sets

the principle, which is extraction with simultaneous derivatisation to a stable adduct, then the reagents and apparatus, the sample preparation, the extraction and derivatisation conditions, the chromatographic separation and detection with the confirmation criteria, the calibration and quantification, the limit of detection and quantification, the calculation and expression of results, the precision and the test report. It takes effect on 1 June 2025, and for a mill or a testing laboratory serving brands with restricted substance lists it is the reference method.

This document describes the determination of total diisocyanate content in textiles using gas chromatography-mass spectrometry (GC-MS) method. This document applies to all types of textile products.

Note. For the list of diisocyanate compounds, see Appendix A.

2 Normative references

This document has no normative references.

3 Terms and definitions

There are no terms or definitions that require definition in this document.

4 Principle

Using ethyl acetate dried over molecular sieves as solvent, ultrasonic extraction and filtration were performed, and then the content of the product was determined by gas chromatography-mass spectrometry (GC-MS). The content of diisocyanate compounds in the sample is quantified by the internal standard method. Note

1. Appendix B provides a method for determining free diisocyanate compounds in textiles using high performance liquid chromatography-fluorescence detector (HPLC-FLD). Content method. Note

2. For textiles containing polyurethane coatings, sponges and other materials, considering that these substances themselves will decompose diisocyanate compounds, high-efficiency Determination by liquid chromatography-fluorescence detector (HPLC-FLD).

5 Reagents or materials

Unless otherwise stated, all reagents used in the analysis were of chromatographic grade.

5.1 Molecular sieve (

0.5 nm). Dry in an oven (6.5) at $(110 \pm 5)^{\circ}\text{C}$ for 4 h before use and cool in a desiccator for later use.

5.2 Ethyl acetate. CAS No. 141-78-6, add 250 g molecular sieve (5.1) for every 500 mL, let stand for 24 h, then filter and seal for later use.

5.3 Standard samples/standard substances of diisocyanate compounds. purity not less than 98%.

5.4 Internal standard. n-tetradecane, purity not less than 98%, CAS No. 629-59-4.

5.5 Internal standard stock solution. Using ethyl acetate (5.2) as solvent, prepare the internal standard substance (5.4) into a stock solution with a mass concentration of 1 000 mg/L. Liquid, valid for 1 month.

5.6 Standard stock solution. Using ethyl acetate (5.2) as solvent, prepare the standard sample/standard substance (5.3) to a mass concentration of.200 mg/L. (The mass concentration of 4,4'-diphenylmethane diisocyanate in the standard stock solution is 600 mg/L, and the mass concentration of other substances is.200 mg/L) The mixed stock solution is valid for 2 weeks.