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

GB/T 44836-2024

Textiles - Determination of glyphosate and its salts

纺织品 草甘膦及其盐的测定

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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: Zhejiang Institute of Inspection and Quarantine, China Textile Standards (Shenzhen) Testing Co., Ltd., Zhejiang Shengshan Textile Co., Ltd., Xiamen Haowei Industrial Co., Ltd., Zhejiang Changxing Tiansheng Chemical Fiber Co., Ltd., Zhejiang Huagang Dyeing and Weaving Group Co., Ltd., China Textile Standard Certification and Inspection Co., Ltd., Hubei Ecological Environment Monitoring Center, Ningbo Institute of Inspection and Quarantine, Zhejiang Sci-Tech University, China Jiliang University, Shaoxing Demei New Materials Co., Ltd., China Textile Information Center, Dongguan Yuanheng Clothing Culture Communication Co., Ltd., Shanghai Quality Supervision and Inspection Technology Research Institute. The main drafters of this document are. Wu Gang, Wu Bingchan, Ren Zhibo, Si Ying, Chen Haixiang, Xu Weizhong, Zhang Jinhui, Zhu Lingqin, Shi Jin, Zhao Hailang, Zhang Jinfu, Xu Zhiqiang, Yang Hongfeng, Chen Bin, Shen Peixin, Wang Lijun, Li Chaocai, Lai Yanfang, Zhang Mingyu, Xu Ye. Determination of glyphosate and its salts in textiles Warning. Personnel using this document should have practical experience in regular laboratory work. This document does not address all possible safety issues. 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 44836-2024 gives the Chinese method for determining glyphosate and its salts in

textiles. Glyphosate reaches textiles from the field: it is used as a harvest aid on cotton and residues can survive into the fibre and the finished garment, and because it appears on brand restricted substance lists and in eco-label criteria, mills are asked to prove its absence. It is a difficult analyte, small, highly polar and poorly retained on ordinary reversed-phase columns, which is why a dedicated method is needed. The standard sets the principle, the reagents and apparatus, the sample preparation and extraction, the derivatisation or the ion chromatographic or hydrophilic interaction separation used to retain the analyte, the mass spectrometric detection with the transitions monitored, the calibration and the compensation of matrix effects, the limits of detection and quantification, the calculation of the result, the precision and the test report. It takes effect on 1 June 2025.

This document describes a method for the determination of glyphosate and its salts in textiles by liquid chromatography-tandem mass spectrometry. This document applies to all types of textile products.

2 Normative references

The contents of the following documents constitute the 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 6682 Specifications and test methods for water used in analytical laboratories

GB/T 10629 Preparation of laboratory samples and test specimens for chemical testing of textiles

3 Terms and definitions

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

4 Principles of the method

The residual glyphosate and its salts in the sample were extracted by ultrasonic extraction with water, and then derivatized with fluorenylmethoxycarbonyl chloride (Fmoc-Cl) and then liquid phase. The results of LC-MS/MS determination and internal standard quantification were used to obtain the molecular weight of glyphosate and its main metabolite aminomethylphosphonic acid. content.

Note. Glyphosate and its salts mainly include glyphosate (CAS No. 1071-83-6), glyphosate isopropylamine salt (CAS No. 38641-94-0), glyphosate potassium salt (CAS No. 70901-12-1), glyphosate ammonium salt (CAS No. 40465-66-5) etc. Glyphosate salts are all very soluble in water, their functional substances are all glyphosate, and their main

metabolites are all aminomethylphosphonic acid. (AMPA, CAS No. 1066-51-9), the content of glyphosate and its salts is actually the content of glyphosate and its main metabolite aminomethylphosphonic acid.

5 Reagents

Unless otherwise specified, all reagents used were of analytical grade.

5.1 Acetonitrile. CAS No. 75-05-8, chromatographic grade.

5.2 Ammonia water. CAS No. 1336-21-6, content 25%–28%.

5.3 Sodium borate. CAS No. 13840-56-7.

5.4 Fluorenylmethoxycarbonyl chloride (FMOC-Cl). CAS No. 28920-43-6, purity $\geq 97.0\%$.

5.5 Glyphosate. CAS No. 1071-83-6, purity $\geq 98\%$.

5.6 Aminomethylphosphonic acid. CAS No. 1066-51-9, purity $\geq 98\%$.