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

GB/T 44165.9-2025

**Determination of key chemicals in consumer products - Part 9:
Hexabromocyclododecanes**

消费品中重点化学物质检测方法 第9部分：六溴环十二烷

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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.

This document is part 9 of GB/T 44165 "Detection methods for key chemical substances in consumer products". GB/T 44165 has been published The following parts.

- Part 1: Short-chain chlorinated paraffins;
- Part 2: Migration of styrene;
- Part 3: Ethyl chloride;
- Part 4.1,4-Dichlorobenzene;
- Part 5: Phenol;
- Part 6: Acrylamide;
- Part 7: Polychlorinated naphthalenes;
- Part 8: Perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA);
- Part 9: Hexabromocyclododecane.

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 and coordinated by the National Technical Committee on Consumer Product Safety Standardization (SAC/TC508).

This document was drafted by: Zhejiang Mingzhu New Materials Co., Ltd., Tsinghua

University, Yike Testing and Certification Co., Ltd., Suzhou Huace Testing Technology Co., Ltd., Zhejiang Hongshengyuan Auto Products Co., Ltd., Zhejiang Aiteli Auto Products Co., Ltd., China National Institute of Standardization, Zhoushan Food and Drug Inspection and Testing Institute, National Stationery Quality Supervision and Inspection Center, Beijing University of Technology, China Textile Standards Inspection and Certification Co., Ltd.

Co., Ltd., Beijing Product Quality Supervision and Inspection Institute, Nanning Customs Technology Center, Jiangsu Kangda Testing Technology Co., Ltd., Sichuan Meilifang Environmental Protection Technology Co., Ltd. and China International Engineering Consulting Co., Ltd.

The main drafters of this document are: Xu Shihu, Chen Yuan, Zhou Yong, Liu Xia, Hu Aisheng, Wen Li, Wang Kunran, Fan Gaofeng, Ma Ping, Pei Xiaoming, Liu Sifan, Li Sumei, Ren Hang, Sun Yana, Li Yali, Xu Lidan, Chen Qianwen, Xu Cungao, Chen Lu, Gao Chen, Fang Xiangjing, Li Ying, Wang Zhiqiang, Gao Xing, Gu Gang, Hui Yamei.

Introduction

In recent years, with the widespread application of new materials and new processes in the field of consumer products, potential safety issues of chemical substances in products have gradually become prominent.

China has formulated a series of standards for the control of chemical substances in consumer products.

The key to controlling chemical substances is to use scientific, efficient and accurate detection methods. GB/T 44165 "Detection of Key Chemical Substances in Consumer Products" The "Test Methods" series of standards aims to provide standardized testing methods for high-risk chemical substances in consumer products and is intended to consist of 9 parts.

- Part 1: Short-chain chlorinated paraffins. The purpose is to provide a method for the determination of short-chain chlorinated paraffins in consumer products.
- Part 2: Styrene migration. The purpose is to provide a method for determining the migration of styrene in consumer products.
- Part 3: Ethyl chloride. The purpose is to provide a method for the determination of ethyl chloride content in consumer products.
- Part 4.1,4-dichlorobenzene. The purpose is to provide a method for the determination of 1,4-dichlorobenzene in consumer products.
- Part 5: Phenol. The purpose is to provide a method for the determination of phenol content in consumer products.

- Part 6: Acrylamide. The purpose is to provide a method for the determination of acrylamide content in consumer products.
- Part 7: Polychlorinated naphthalenes. The purpose is to provide a method for the determination of polychlorinated naphthalenes in consumer products.
- Part 8: Perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). The purpose is to provide perfluorooctane sulfonic acid in consumer products Determination method of perfluorooctanoic acid (PFOS) and perfluorooctanoic acid (PFOA) content.
- Part 9: Hexabromocyclododecane. The purpose is to provide a method for the determination of hexabromocyclododecane in consumer products.

Detection methods for key chemical substances in consumer products Part 9:
Hexabromocyclododecane

1 Scope

This document describes a method for the determination of hexabromocyclododecane (alpha, beta, gamma-hexabromocyclododecane) in consumer products by HPLC-MS/MS.

This document applies to hexabromocyclododecane (alpha, beta, gamma-hexabromocyclododecane) in consumer products (except electronic and electrical products, textiles, toys) containing the following materials.

Determination of bromocyclododecane).

- plastic;
- rubber;
- Liquid materials such as adhesives and glues.

Other materials used in consumer products shall be tested with reference to this document after verification.

2 Normative references

GB/T 6682

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 consumer product

Products designed and manufactured primarily, but not exclusively, for personal use.

Note. Includes components, parts, accessories, instructions and packaging of the product.

For detailed classification of consumer goods, please refer to GB/T 36431.

[Source. GB/T 35248-2017, 2.2, modified]

3.2

A class of cyclic alkanes composed of 12 carbon atoms, in which 6 hydrogen atoms are replaced by bromine atoms. The chemical formula is $C_{12}H_{18}Br_6$.

Note. HBCD exists in multiple stereoisomers, mainly including alpha, beta and gamma-HBCD.

4 Principle

The crushed and mixed samples were quickly extracted with acetone-n-hexane solvent, purified by solid phase extraction column, concentrated and fixed, and then purified by high performance liquid chromatography (HPLC).

The product was determined by HPLC-MS/MS and quantified by external standard method.