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

GB/T 44165.7-2025

**Determination of key chemicals in consumer products - Part 7:
Polychlorinated naphthalenes**

消费品中重点化学物质检测方法 第7部分：多氯萘

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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 7 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).

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Introduction

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

This has attracted great attention from all walks of life at home and abroad. China has formulated a series of standards for the control of chemical substances in consumer products.

The corresponding scientific, efficient and accurate detection methods are the key to controlling chemical substances.

GB/T 44165 "Detection Methods for Key Chemical Substances in Consumer Products" aims to provide standardized detection methods for high-risk chemical substances in consumer products.

The test method is planned 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 7:
Polychlorinated naphthalenes

1 Scope

This document describes a method for the determination of polychlorinated naphthalenes in consumer products by isotope dilution high-resolution gas chromatography-high-resolution mass spectrometry.

This document is applicable to the determination of 25 polychlorinated naphthalene congeners in consumer products containing textiles, plastics and other materials, namely CN2, CN3, CN5, CN6, CN9, CN13, CN27, CN28, CN31, CN36, CN42, CN46, CN48, CN50, CN52, CN53, CN54, CN66, CN67, CN68, CN69, CN70, CN72, CN73, CN75.

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

after verification.

2 Normative references

This document has no normative references.

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 general term for compounds in which the hydrogen atoms on the naphthalene ring are replaced by chlorine atoms.

4 Principle

The polychlorinated naphthalenes in the sample were extracted with a mixed solvent of n-hexane and dichloromethane, concentrated and purified, and then analyzed by high-resolution gas chromatography-mass spectrometry.

Spectral separation and detection were used for qualitative analysis based on retention time and monitoring ion abundance ratio, and isotope dilution method was used for quantitative analysis.

5 Reagents or materials

Warning. The solvents and standard samples used in the experiment are toxic. Reagent preparation and sample pretreatment should be carried out in a fume hood.

During operation, protective equipment should be worn as required to avoid inhalation into the respiratory tract or contact with skin or clothing.

The water used in the experiment was freshly prepared distilled water or deionized water that did not contain the target substance.

5.1 Concentrated sulfuric acid (H₂SO₄, CAS No.. 7664-93-9). high purity, mass fraction is 98%.