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

GB/T 21818-2025

Replacing GB/T 21818-2008

Chemicals - Inherent biodegradability - Modified MITI test (II)

化学品 固有生物降解性 改进的MITI试验 (II)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents". Drafting.

This document supersedes GB/T 21818-2008 "MITI Test (II) for Improved Inherent Biodegradability of Chemicals" and is consistent with GB/T 21818- Compared to 2008, aside from structural adjustments and editorial changes, the main technical changes are as follows.

- The scope has been changed (see Chapter 1, Chapter 1 of the 2008 edition);
- The content of "Test Substance Information" has been changed (see Chapter 4, Chapter 3 of the 2008 edition);
- The content of "Device" has been changed (see 7.1, 5.1 in the 2008 version);
- Added "Test Water" (see 7.3);
- The "Group Design" section has been modified (see 8.1, 6.1 in the 2008 version);
- The content of "Test Substance Pretreatment" has been revised (see 8.2, 6.2 in the 2008 edition);
- The content of "Experimental Operations" has been changed (see 8.3, 6.3 in the 2008 version);
- The content on "Quality Control" has been revised (see Chapter 9, Chapter 7 in the 2008 edition);
- The calculation of theoretical oxygen demand has been revised (see 10.2, 8.2 in the 2008 edition);
- The content of the "Results Report" has been changed (see 10.3, 8.3 in the 2008 version).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Hazardous Chemicals Management (SAC/TC251).

This document was drafted by: Nanjing Institute of Environmental Sciences, Ministry of Ecology and Environment; Solid Waste and Chemicals Management Technology Center, Ministry of Ecology and Environment.

Shanghai Testing Center, CCIC Testing & Inspection (Tianjin) Co., Ltd., Shenhua Testing Technology (Nantong) Co., Ltd., Ningbo Customs Technology Technical Center, Guangdong Academy of Sciences Institute of Microbiology (Guangdong Provincial Microbiology Analysis and Testing Center).

The main drafters of this document are: Guo Min, Shi Lili, Xing Weilong, Gu Wen, Wang Lei, Liu Chunxin, Teng Xiaoming, Yang Xuefei, Zhou Lili, and Liu Hanwei.

Yang Kun, Shi Lingkun, He Junyi, Gao Liang, Yang Li, Wang Lei, Huo Jian, Feng Liana.

The release history of this document and the document it replaces is as follows.

- First published in 2008 as GB/T 21818-2008;
- This is the first revision.

Inherent biodegradability of chemicals Improved MITI test (II)

1 Scope

This document establishes the principles of the MITI test (II) for improving the inherent biodegradability of chemicals, and specifies the test substance information, reference material, and other relevant information.

Requirements for testing systems, testing procedures, quality control and quality assurance, and data and reporting.

This document applies to the MITI test (II) for the improved inherent biodegradability of chemicals.

2 Normative references

GB/T 21796

GB/T 21845

GB/T 21851

GB/T 21855

GB/T 22228

GB/T 22229

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1

Under optimal testing conditions, the biodegradability of the test substance after prolonged contact with the inoculum.

3.2

The amount of oxygen consumed by microorganisms in decomposing organic matter.

Note. The number of milligrams of oxygen consumed per milligram of the test substance (mg/mg) is expressed.

3.3 7 Test System

The total amount of oxygen required for the test substance to be completely oxidized, calculated based on the molecular formula.

Note. The number of milligrams of oxygen consumed per milligram of the test substance (mg/mg) is expressed.

4 Test substance information

The following information about the test substance should be obtained before the test.

- a) Identification information (common name, chemical name or IUPAC name, CAS number), chemical purity;
- b) Solubility in water determined according to GB/T 21845 method;
- c) Vapor pressure determined according to GB/T 22228 or GB/T 22229;
- d) Adsorption coefficient K_{oc} determined according to GB/T 21851 method;
- e) Hydrolysis as determined according to GB/T 21855;
- f) Microbial toxicity as determined according to GB/T 21796;
- g) Methods for analyzing the concentration of the test substance.

5 Experimental Principle

The inherent biodegradability of chemicals is evaluated by measuring biochemical oxygen demand (BOD) and the residual amount of the test substance.

Using the test substance as the sole organic carbon source, microorganisms were inoculated into a test container containing the test substance, and the microorganisms were subjected to treatment without prior acclimatization to the test substance.

Under the premise of chemical analysis, the BOD value of the test solution was continuously measured using an automated, closed BOD analyzer. The BOD value was then compared with the chemical composition.

Analyze the results (such as measuring the concentration of dissolved organic carbon or the residual concentration of chemical substances) and calculate the biodegradation rate.

6 Reference Material

To test the activity of the inoculum, a reference test should be set up. Sodium acetate, sodium benzoate, or aniline (freshly distilled) are recommended as references.

If other reference materials are used, the test report should explain the basis for selection and the criteria for determining effectiveness.

7.1 Equipment

7.1.1 Breathalyzer or BOD meter (with at least 6 BOD bottles and CO₂ absorption cups).