



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

GB/T 40367-2021

**Plastics - Determination of the aerobic biodegradation of
nonfloating materials exposed to marine sediment - Method by
analysis of evolved carbon dioxide**

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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 of Standardization Documents"

Drafting.

This document uses the translation method equivalent to ISO 22404.2019 "Final aerobic generation of plastics exposed to non-floating materials in marine sediments."

The determination of the decomposing ability of the substance is carried out by the method of analyzing the released carbon dioxide".

The Chinese documents that have consistent correspondence with the normatively cited international documents in this document are as follows.

---GB/T 38787-2020 Sample preparation method for biodegradation test of plastic materials (ISO 10210.2012, IDT)

Introduction

Products made of biodegradable plastics are designed to be recycled through organic cycles in composting plants or anaerobic digesters. Not because

These products are biodegradable (biodegradable) and are considered to be freely discarded in the environment. This is not desirable. These products should also

It is recycling and reuse. However, the test method for determining the degree and rate of biodegradation of plastics in natural environments (such as soil or marine environments) is

It is worth paying attention to in order to better describe the degradation behavior of plastics in these specific environments. In fact, some products used in the ocean are made of plastic

These products are sometimes lost or intentionally placed in the marine environment. The

characteristics of biodegradable plastic materials can be

It is characterized by the application of specific test methods, which can be used for the biodegradability of plastics exposed to marine sediments and seawater.

Carry out a quantitative assessment.

This test method provides a test method for calculating and reporting the level of biodegradation obtained under laboratory conditions using marine inoculants.

Law. Marine inoculum is the sediment sampled in the intertidal zone, and the plastic material is exposed to this environmental matrix, and then the released dioxygen is measured

Carbonization is performed to determine the degree of biodegradation.

Plastic exposure to non-floating materials in marine sediments

Determination of final aerobic biodegradability

By analyzing the method of released carbon dioxide

1 Scope

This document describes a laboratory method for determining the degree and rate of aerobic biodegradation of plastic materials. This test method is also applicable to its

He solid material.

The degree of biodegradation is obtained by measuring the carbon dioxide released by plastic materials

The sandy intertidal zone was sampled and moisturized with salt water under laboratory conditions.

This test method is to simulate the habitat environment of the sandy intertidal zone under laboratory conditions. The sandy intertidal zone is called nearshore shallow in marine science.

kelp.

The conditions described in this document may not always correspond to the optimal conditions for maximum biodegradation.

Deviations from the test conditions described in this document should be stated in the test report.

2 Normative references

The contents of the following documents constitute the indispensable clauses of this

document through normative references in the text. Among them, dated quotations

Only the version corresponding to that date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

This document.

ISO 10210 Plastics-Methods for the preparation of samples for the biodegradation test of plastic plastic materials

samplesforbiodegradationtestingofplasticmaterials)

3 Terms and definitions

The following terms and definitions apply to this document.

The terms and definitions used in this document in ISO and IEC can be found on the following website.

3.1

Tidalzone

The boundary line between the ocean and the land, from the high tide line which is rarely submerged by water to the low tide line which is often covered by water.

Note 1.The intertidal zone is usually a piece of sand, which has been kept moist due to the beating of waves.

Note 2.There are also rocky and rocky coastlines.

Note 3.The intertidal zone is also called the nearshore shallow sea zone (coastal zone), the coastal zone, the coastal zone, the tidal zone, and the foreshore.

3.2

Theoreticalamountofevolvedcarbondioxide

ThCO₂

The theoretical maximum value of carbon dioxide that can be generated when the experimental material is completely oxidized can be calculated from the molecular formula or total organic carbon (TOC), as

The number of milligrams of carbon dioxide released per milligram or per gram of test material is expressed (mgCO₂/g test material or mgCO₂/mg test material).