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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 38787-2020

Plastics - Methods for the preparation of samples for biodegradation testing of plastic materials

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

The translation method used in this standard is equivalent to ISO 10210..2012 "Sample Preparation Method for Biodegradation Test of Plastic Materials".

The documents in China that have a consistent correspondence with the normatively cited international documents in this standard are as follows.

--- GB/T 2035-2008 Plastic Terms and Definitions (ISO 472..1999, IDT);

--- GB/T 19276.1-2003 Determination of the final aerobic biodegradability of materials in aqueous culture medium

Method of oxygen demand in the suction meter (ISO 14851..1999, IDT);

--- GB/T 19276.2-2003 Determination of the final aerobic biodegradability of materials in aqueous culture medium

Carbon dioxide method (ISO 14852..1999, IDT);

--- GB/T 32106-2015 Determination of the final anaerobic biodegradability of plastics in aqueous medium

Gas product method (ISO 14853..2005, IDT);

--- GB/T 19277.1-2011 Determination of the ultimate aerobic biodegradability of materials under controlled composting conditions

The method of carbon dioxide Part 1. General method (ISO 14855-1..1999, IDT);

--- GB/T 19277.2-2013 Determination of the ultimate aerobic biodegradability of materials under controlled composting conditions using measured release

Method of carbon dioxide-Part 2. Determination of the amount of carbon dioxide released under laboratory conditions by gravimetric analysis

(ISO 14855-2..2007, IDT);

--- GB/T 33797-2017 The final anaerobic biodegradability of plastics under high solids composting

Analysis and determination of the method of releasing biogas (ISO 15985..2014, IDT);

--- GB/T 28206-2011 Technical requirements for compostable plastics (ISO 17088..2008, IDT);

--- GB/T 22047-2008 Determination of the final aerobic biodegradability of plastic materials in the soil using the closed respirometer

Medium oxygen demand or method for determining the released carbon dioxide (ISO 17556..2003, IDT).

This standard has made the following editorial changes.

--- Appendix D adds the national standard number corresponding to the ISO standard.

Please note that some content of this document may involve patents. The issuer of this document does not assume responsibility for identifying these patents.

This standard is proposed and managed by the National Standardization Technical Committee on Bio-based Materials and Degradable Products (SAC/TC380).

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Introduction

Plastic recycling technology includes material recycling, organic material recycling and energy recycling. Using biodegradable plastic is organic

One of the most valuable recycling methods in recycling.

Some determine the ultimate aerobic and anaerobic biodegradability of plastic materials in aqueous media, activated sludge, compost, digested sludge and soil

Of international standards have been published. These standards include ISO 14851, ISO 14852, ISO 14853, ISO 14855-1, ISO 14855-2,

ISO 15985 and ISO 17556. Due to the difference in test conditions, even if the same sample is used, standard users may have difficulty comparing

Biodegradability during the test. These differences may be due to compost preparation, test preparation methods, sample shape and/or size, etc.

Up. Accurate comparison of biodegradability performance data of the same plastic material

is difficult to achieve, unless the conditions specified in the standard are precisely implemented.

To achieve consistency in the above standards, a unified method for preparing test samples is very important. The method described in this standard is plastic

The technique of sample preparation in material biodegradation test provides a consistent method.

Sample preparation method for biodegradation test of plastic materials

Warning --- The application of this standard may involve hazardous materials, operations and equipment. This standard is not intended to address the possibility of its use

All related security issues. The users of this standard are responsible for formulating appropriate safety and health protection measures in advance and determining relevant standards

The scope of restrictions.

1 Scope

This standard describes the ultimate aerobic and anaerobic biodegradation tests used in aqueous media, activated sludge, compost, digested sludge and soil

Performance test sample preparation method. The purpose is to achieve the consistency of the size of the test sample, thereby improving the final biodegradability of the product.

During the trial, the repeatability of the test results.

These methods are applicable to the following materials.

--- natural and/or synthetic polymers, copolymers and their mixtures;

--- Plastic materials containing additives such as plasticizers and pigments;

--- Plastic composite materials containing organic or inorganic fillers;

--- Products made of the above materials.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article

Pieces. For the cited documents without date, the latest version (including all amendments) applies to this document.

ISO 472 Plastic Terms and Definitions (Plastics-Vocabulary)

ISO 3310-1 Technical requirements and tests for test sieve Part 1. Test sieves

(Testsieves-Technical)

requirementsandtesting-Part 1. Testsievesofmetalwirecloth)

ISO 14851 Determination of the final aerobic biodegradability of the material in the aqueous culture medium uses the determination of the oxygen demand in the closed respirometer

Method
(Determinationoftheultimateaerobicbiodegradabilityofplasticmaterialsinanaqueousmedi-

um-Methodbymeasuringtheoxygendemandinaclosedrespirometer)

ISO 14852 Determination of the final aerobic biodegradability of the material in the aqueous culture medium uses the method for measuring the released carbon dioxide

(Determinationoftheultimateaerobicbiodegradabilityofplasticmaterialsinanaqueousmedium-

Methodbyanalysisofevolvedcarbondioxide)

ISO 14853 Determination of the final anaerobic biodegradability of plastics in aqueous culture fluids

Method
(Plastics-Determinationoftheultimateanaerobicbiodegradationofplasticmaterialsinanaqueou
s

system-Methodbymeasurementofbiogasproduction)

ISO 14855-1 The ultimate aerobic biodegradability of materials under controlled composting conditions

Methods Part 1. General methods
(Determinationoftheultimateaerobicbiodegradabilityofplasticmaterials

undercontroledcompostingconditions-Methodbyanalysisofevolvedcarbondioxide-Part 1. Gen-

eralmethod)

ISO 14855-2 The ultimate aerobic biodegradability of materials under controlled composting

Methods Part 2. Gravimetric determination of the amount of carbon dioxide released under laboratory conditions (Determination of the ultimate)

aerobicbiodegradabilityofplasticmaterialsundercontroledcompostingconditions-Methodbyan aly-

sisofevolvedcarbondioxide-Part 2.
Gravimetricmeasurementofcarbondioxideevolvedinalabora-