



NSAI
Standards

Irish Standard
I.S. EN ISO 15985:2017

Plastics - Determination of the ultimate anaerobic biodegradation under high-solids anaerobic-digestion conditions - Method by analysis of released biogas (ISO 15985:2014)

I.S. EN ISO 15985:2017

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN ISO 15985:2017 is the adopted Irish version of the European Document EN ISO 15985:2017, Plastics - Determination of the ultimate anaerobic biodegradation under high-solids anaerobic-digestion conditions - Method by analysis of released biogas (ISO 15985:2014)

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EUROPEAN STANDARD

EN ISO 15985

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2017

ICS 83.080.01

English Version

**Plastics - Determination of the ultimate anaerobic
biodegradation under high-solids anaerobic-digestion
conditions - Method by analysis of released biogas (ISO
15985:2014)**

Plastiques - Évaluation de la biodégradation anaérobie
ultime dans des conditions de digestion anaérobie à
teneur élevée en solides - Méthode par analyse du
biogaz libéré (ISO 15985:2014)

Kunststoffe - Bestimmung der vollständigen anaeroben
biologischen Abbaubarkeit unter anaeroben High-
Solid-Aufschlussbedingungen - Verfahren mittels
Analyse des freigesetzten Biogases (ISO 15985:2014)

This European Standard was approved by CEN on 17 October 2017.

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EN ISO 15985:2017 (E)

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European foreword

The text of ISO 15985:2014 has been prepared by Technical Committee ISO/TC 61 “Plastics” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 15985:2017 by Technical Committee CEN/TC 249 “Plastics” the secretariat of which is held by NBN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2018, and conflicting national standards shall be withdrawn at the latest by June 2018.

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Endorsement notice

The text of ISO 15985:2014 has been approved by CEN as EN ISO 15985:2017 without any modification.

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INTERNATIONAL STANDARD

ISO
15985

Second edition
2014-05-01

Plastics — Determination of the ultimate anaerobic biodegradation under high-solids anaerobic-digestion conditions — Method by analysis of released biogas

*Plastiques — Évaluation de la biodégradation anaérobie ultime dans
des conditions de digestion anaérobie à teneur élevée en solides —
Méthode par analyse du biogaz libéré*



Reference number
ISO 15985:2014(E)

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ISO 15985:2014(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information.

The committee responsible for this document is ISO/TC 61, *Plastics*, Subcommittee SC 5, *Physical-chemical properties*.

This second edition cancels and replaces the first edition (ISO 15985:2004). It also incorporates the Technical Corrigendum ISO 15985:2004/Cor.1:2007.

The main changes are:

- a) requirements regarding disintegration removed in the whole document;
- b) units added where necessary;
- c) bibliography updated.

Introduction

New types of plastic are being developed in which biodegradability is a specifically sought-for characteristic. These plastics and derived products can be added to or used as feedstock for biological recycling and recovery in aerobic composting plants or anaerobic biogasification plants. To make sure these plastics are fit for biological recycling, their biodegradability must be demonstrated, preferably by standard test methods.

Standard test methods which determine the degree of biodegradation under aerobic, high-solids conditions have been developed (e.g. ISO 14855-1 and ISO 14855-2). However, it is well known from the literature that the degree of biodegradation can differ significantly depending on the environmental conditions such as the presence or the absence of oxygen (aerobic or anaerobic). To have a complete understanding of the biodegradation characteristics of a plastic under these different environmental conditions, various methods are required.

This International Standard specifies a method for the determination of the ultimate anaerobic biodegradation of plastic materials under high-solids conditions. This is representative of systems for the anaerobic biogasification of the organic fraction of municipal solid waste. Another method for determining the degree of anaerobic biodegradation is ISO 11734. However, this method is designed for soluble test materials in aqueous test conditions and at low concentrations (typically detergents) which is not typical of plastics.

Plastics — Determination of the ultimate anaerobic biodegradation under high-solids anaerobic-digestion conditions — Method by analysis of released biogas

1 Scope

This International Standard specifies a method for the evaluation of the ultimate anaerobic biodegradability of plastics based on organic compounds under high-solids anaerobic-digestion conditions by measurement of evolved biogas at the end of the test. This method is designed to simulate typical anaerobic digestion conditions for the organic fraction of mixed municipal solid waste. The test material is exposed in a laboratory test to a methanogenic inoculum derived from anaerobic digesters operating only on pretreated household waste. The anaerobic decomposition takes place under high-solids (more than 20 % total solids) and static non-mixed conditions. The test method is designed to yield the percentage of carbon in the test material and its rate of conversion to evolved carbon dioxide and methane (biogas).

The conditions described in this International Standard might not always correspond to the optimum conditions for the maximum degree of biodegradation to occur.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8245, *Water quality — Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

ultimate anaerobic biodegradation

breakdown of an organic compound by microorganisms in the absence of oxygen to carbon dioxide, methane, water, and mineral salts of any other elements present (mineralization) plus new biomass

3.2

total dry solids

amount of solids obtained by taking a known mass of test material or inoculum and drying at about 105 °C to constant mass

3.3

volatile solids

amount of solids obtained by subtracting the residue of a known mass of test material or inoculum after incineration at about 550 °C from the total dry solids content of the same sample

Note 1 to entry: The volatile solids content is an indication of the amount of organic matter present.

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