

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)

 $\ensuremath{\mathbb C}$ CEN 2017 $\hfill No copying without NSAI permission except as permitted by copyright law.$

I.S. EN ISO 15985:2017

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on: EN ISO 15985:2017 *Published:* 2017-12-06

This document was published under the authority of the NSAI and comes into effect on:

2017-12-24

ICS number:

83.080.01

NOTE: If blank see CEN/CENELEC cover page

NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
Northwood, Santry	E standards@nsai.ie	F +353 1 857 6729
Dublin 9	W NSAI.ie	W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

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)

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This is a free page sample. Access the full version online.

This page is intentionally left blank

EUROPEAN STANDARD NORME EUROPÉENNE

EN ISO 15985

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.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION COMITÉ EUROPÉEN DE NORMALISATION EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

This is a free page sample. Access the full version online. $I.S.\ EN\ ISO\ 15985:2017$

EN ISO 15985:2017 (E)

Contents	Page
European foreword	

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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

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

This is a free page sample. Access the full version online.

This page is intentionally left blank

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) ISO 15985:2014(E)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2014

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office Case postale 56 • CH-1211 Geneva 20 Tel. + 41 22 749 01 11 Fax + 41 22 749 09 47 E-mail copyright@iso.org Web www.iso.org

Published in Switzerland

Page

Contents

Forev	eword	iv	
Intro	oduction	v	
1	Scope		
2	Normative references		
3	Terms and definitions		
4	Principle		
5	Test environment		
6	Reagents	2	
7	Apparatus		
8	Procedure 8.1 Preparation of the inoculum 8.2 Preparation of test material and reference material 8.3 Start-up of the test 8.4 Incubation period 8.5 Termination of the test 9.1 Calculation and expression of results 9.1 Calculation of gaseous carbon 9.2 Calculation of the percentage biodegradation 9.3 Calculation of loss in mass	3 3 4 4 4 5 5 5 5 5 6	
10	9.4 Expression of results		
11	Test renort	۰	
Δnne	nnov A (informativa) Principla of test system		
Anne	Annex R (informative) Frample of loss in mass determination		
Dipit	Chliggraphy		
RIDII	lography		

This is a free page sample. Access the full version online. I.S. EN ISO 15985:2017

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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.

This is a free page sample. Access the full version online. $I.S.\ EN\ ISO\ 15985:2017$

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

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 $^{\circ}\mathrm{C}$ 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.



This is a free preview. Purchase the entire publication at the link below:

Product Page

S Looking for additional Standards? Visit Intertek Inform Infostore

> Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation