



## ISO 14855-2

Third edition  
2026-09

# Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions — Method by analysis of evolved carbon dioxide —

## Part 2: Gravimetric measurement of carbon dioxide evolved in a laboratory-scale test

*Détermination de la biodégradabilité aérobie ultime des matériaux plastiques dans des conditions contrôlées de compostage — Méthode par analyse du dioxyde de carbone libéré —*

*Partie 2: Mesurage gravimétrique du dioxyde de carbone libéré lors d'un essai de laboratoire*

This is a preview of ISO 14855-2:2026. Click [here](#) to purchase the full version from the ANSI store.



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2026

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

This is a preview of ISO 14855-2:2026. [Click here to purchase the full version from the ANSI store.](#)

|                                                                                                                                                      |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Foreword</b>                                                                                                                                      | <b>iv</b> |
| <b>Introduction</b>                                                                                                                                  | <b>v</b>  |
| <b>1 Scope</b>                                                                                                                                       | <b>1</b>  |
| <b>2 Normative references</b>                                                                                                                        | <b>1</b>  |
| <b>3 Terms and definitions</b>                                                                                                                       | <b>1</b>  |
| <b>4 Principle</b>                                                                                                                                   | <b>3</b>  |
| <b>5 Reagents</b>                                                                                                                                    | <b>3</b>  |
| <b>6 Apparatus</b>                                                                                                                                   | <b>4</b>  |
| <b>7 Procedure</b>                                                                                                                                   | <b>5</b>  |
| 7.1 Preparation of the inoculum                                                                                                                      | 5         |
| 7.2 Preparation of the sea sand                                                                                                                      | 6         |
| 7.3 Preparation of test material and reference material                                                                                              | 6         |
| 7.4 Starting up the test                                                                                                                             | 6         |
| 7.5 Measurement of the evolved carbon dioxide                                                                                                        | 7         |
| 7.5.1 Gravimetric analysis                                                                                                                           | 7         |
| 7.5.2 Alternative quantitative analytical methods                                                                                                    | 7         |
| 7.6 Incubation period                                                                                                                                | 8         |
| 7.7 Termination of the test                                                                                                                          | 8         |
| <b>8 Calculation</b>                                                                                                                                 | <b>9</b>  |
| 8.1 Theoretical amount of carbon dioxide evolved by test material                                                                                    | 9         |
| 8.2 Percentage biodegradation                                                                                                                        | 9         |
| <b>9 Expression and interpretation of results</b>                                                                                                    | <b>9</b>  |
| <b>10 Validity of results</b>                                                                                                                        | <b>10</b> |
| <b>11 Test report</b>                                                                                                                                | <b>10</b> |
| <b>Annex A (informative) Basic principle of the test</b>                                                                                             | <b>11</b> |
| <b>Annex B (informative) Example of an apparatus using an electrically heated composting vessel</b>                                                  | <b>13</b> |
| <b>Annex C (informative) Derivation of the formula used to calculate the degree of biodegradation from the amount of carbon dioxide evolved</b>      | <b>15</b> |
| <b>Annex D (informative) Determination of the degree of biodegradation of plastics under composting conditions — Synchronous gas sampling method</b> | <b>16</b> |
| <b>Bibliography</b>                                                                                                                                  | <b>21</b> |

This is a preview of ISO 14855-2:2026. Click here to purchase the full version from the ANSI store.

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 document 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 14, *Environmental aspects*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 14855-2:2018), which has been technically revised.

The main changes are as follows:

- the NDIR method to the measurement of evolved carbon dioxide in addition to the conventional gravimetric method has been added;
- a schematic diagram of the measurement device and an example of biodegradability measurement using an NDIR sensor have been added to [Annex D](#).

A list of all parts in the ISO 14855 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

This is a preview of ISO 14855-2:2026. [Click here to purchase the full version from the ANSI store.](#)

Management of plastics waste is a serious problem in the world. Plastics recovery technologies include material recovery (mechanical recycling, chemical or feedstock recycling, and biological or organic recycling) and energy recovery (heat, steam or electricity as a substitute for fossil fuels or other fuel resources). The use of biodegradable plastics is one valuable recovery option (biological or organic recycling).

Several ISO standards for determining the ultimate aerobic/anaerobic biodegradability of plastic materials have been published. In particular, ISO 14855-1 is a common test method that measures the amount of carbon dioxide evolved using methods such as continuous infrared analysis, gas chromatography or titration.

Compared with ISO 14855-1, the amounts of compost inoculum and test sample used in this document are one-tenth the size. In order to ensure the activity of the compost inoculum, inert material that gives the mixture the same texture as soil is mixed into the inoculum. The carbon dioxide evolved from the test vessel is determined by absorbing it in a carbon dioxide trap and carrying out gravimetric analysis of the absorbent. The method described in this document, which uses a closed system to capture the carbon dioxide evolved, can also be used to obtain valuable information, by means of isotopic-labelling studies, on the way in which the molecular structure of co-polymers degrades.

In addition to traditional gravimetric methods, this test method adds a new way to measure carbon dioxide using spectroscopic non-dispersive infrared (NDIR) technology, significantly reducing the routine work and chemical use required for quantitative measurement without compromising the quantitative accuracy of chemical methods.