



NSAI
Standards

Irish Standard
I.S. EN ISO 18187:2018

Soil quality - Contact test for solid samples using the dehydrogenase activity of *Arthrobacter globiformis* (ISO 18187:2016)

I.S. EN ISO 18187:2018

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 18187:2018

Published:

2018-02-21

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

2018-03-11

ICS number:

13.080.30

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN ISO 18187:2018 is the adopted Irish version of the European Document EN ISO 18187:2018, Soil quality - Contact test for solid samples using the dehydrogenase activity of *Arthrobacter globiformis* (ISO 18187:2016)

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 page is intentionally left blank

EUROPEAN STANDARD

EN ISO 18187

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2018

ICS 13.080.30

English Version

Soil quality - Contact test for solid samples using the
dehydrogenase activity of *Arthrobacter globiformis* (ISO
18187:2016)

Qualité du sol - Essai contact pour échantillons solides
utilisant l'activité déshydrogénase de *Arthrobacter*
globiformis (ISO 18187:2016)

Bodenbeschaffenheit - Feststoffkontakttest unter
Verwendung der Dehydrogenaseaktivität von
Arthrobacter globiformis (ISO 18187:2016)

This European Standard was approved by CEN on 14 February 2018.

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: Rue de la Science 23, B-1040 Brussels

EN ISO 18187:2018 (E)

Contents	Page
European foreword.....	3

European foreword

The text of ISO 18187:2016 has been prepared by Technical Committee ISO/TC 190 “Soil quality” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 18187:2018 by Technical Committee CEN/TC 444 “Test methods for environmental characterization of solid matrices” the secretariat of which is held by NEN.

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 August 2018, and conflicting national standards shall be withdrawn at the latest by August 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 18187:2016 has been approved by CEN as EN ISO 18187:2018 without any modification.

This page is intentionally left blank

INTERNATIONAL
STANDARD

ISO
18187

First edition
2016-05-01

**Soil quality — Contact test for solid
samples using the dehydrogenase
activity of *Arthrobacter globiformis***

*Qualité du sol — Essai contact pour échantillons solides
utilisant l'activité déshydrogénase de *Arthrobacter globiformis**



Reference number
ISO 18187:2016(E)

© ISO 2016

ISO 18187:2016(E)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

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
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	4
5 Reagents and material	4
5.1 Test organisms.....	4
5.2 Control substrates.....	4
5.2.1 General.....	4
5.2.2 Control for soils.....	4
5.2.3 Control for waste material.....	5
5.3 Test substrates.....	5
5.4 Chemicals.....	6
6 Apparatus	8
7 Procedure	9
7.1 Preparation of dilutions.....	9
7.2 Reference substance and positive control preparation.....	9
7.3 Contact test procedure.....	9
7.3.1 General.....	9
7.3.2 Aeration.....	10
7.3.3 Deactivation.....	10
7.3.4 Preparation of the inoculum.....	11
7.3.5 Incubation and fluorescence measurement.....	11
7.4 Interferences.....	11
8 Calculation and expression of results	12
8.1 Calculation.....	12
8.1.1 Relative fluorescence.....	12
8.1.2 Determining the percentage of inhibition.....	12
8.2 Expression of results.....	12
9 Validity of the test	13
10 Statistical analysis	13
11 Test report	14
Annex A (informative) Results on the ring test	15
Annex B (informative) Preparation of test organisms	21
Annex C (informative) Testing chemical substances	23
Bibliography	25

ISO 18187:2016(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 190, *Soil quality*, Subcommittee SC 4, *Biological methods*.

Introduction

This International Standard describes the miniaturized solid contact assay with *Arthrobacter globiformis* that allows the preliminary assessment of solid material (i.e. soil and waste materials) within 6 h. The principle of the assay relies on dehydrogenase activity inhibition of an added test organism, caused by bioavailable toxic substances in soil and waste samples. This is an ecologically relevant assay as far as it uses a ubiquitous soil bacteria species with high affinity to surfaces^{[16][6]} which dehydrogenases are involved in different biological mechanisms withstanding bacteria integrity (e.g. respiratory chains). Moreover, it has been noticed that this parameter (dehydrogenase activity inhibition) is quite sensitive to different toxic substances.^{[19][10][14][15]}

Overall, this assay is non-labour-intensive, rapid, cost-effective and sensitive, providing results that improve the physical and chemical assessment of natural samples while allowing a quick indication of their biological effects.

The miniaturized solid contact assay is based on the solid contact assay established by Reference [7].

This International Standard is also based on Reference [23].

The results of an interlaboratory trial towards the evaluation of test variability to assess different waste and soil samples, as well as chemicals, are presented in [Annex A](#).

Soil quality — Contact test for solid samples using the dehydrogenase activity of *Arthrobacter globiformis*

1 Scope

This International Standard specifies a rapid method for assessing solid samples in an aerobic suspension, by determining the inhibition of dehydrogenase activity of *Arthrobacter globiformis* using the redox dye resazurin.

It is applicable for assessing the effect of water-soluble and solid matter bounded non-volatile contaminants of natural samples, such as soils and waste materials. The test yields a result within 6 h and can therefore be used for screening potentially contaminated material.

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 5667-15, *Water quality — Sampling — Part 15: Guidance on the preservation and handling of sludge and sediment samples*

ISO 10381-6, *Soil quality — Sampling — Part 6: Guidance on the collection, handling and storage of soil under aerobic conditions for the assessment of microbiological processes, biomass and diversity in the laboratory*

CEN/TR 15310-1, *Characterization of waste — Sampling of waste materials — Part 1: Guidance on selection and application of criteria for sampling under various conditions*

EN 14735, *Characterization of waste — Preparation of waste samples for ecotoxicity tests*

3 Terms and definitions

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

3.1

contact time

exposure period of the bacteria to a suspension of solid matter

3.2

negative control

sample of a *control substrate* (3.6) with a mixture of known solutions [distilled water, medium B or *inoculum* (3.12)].

Note 1 to entry: It is used to standardize the analysis.

3.3

positive control

sample of a *control substrate* (3.6) with a mixture of known solutions [distilled water, medium B or *inoculum* (3.12)] and a reference substance

Note 1 to entry: It is used to check the sensitivity of the test organism.

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

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-