



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

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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)

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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.

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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of an identical text or by endorsement, at the latest by August 2018, and conflicting national standards shall be withdrawn at the latest by August 2018.

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Endorsement notice

The text of ISO 18187:2016 has been approved by CEN as EN ISO 18187:2018 without any modification.

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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
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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).

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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 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.

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