



NSAI
Standards

Irish Standard
I.S. EN ISO 14238:2013

Soil quality - Biological methods -
Determination of nitrogen mineralization and
nitrification in soils and the influence of
chemicals on these processes (ISO
14238:2012)

I.S. EN ISO 14238:2013

Incorporating amendments/corrigenda/National Annexes issued since publication:

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EUROPEAN STANDARD

EN ISO 14238

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English Version

Soil quality - Biological methods - Determination of nitrogen mineralization and nitrification in soils and the influence of chemicals on these processes (ISO 14238:2012)

Qualité du sol - Méthodes biologiques - Détermination de la minéralisation de l'azote et de la nitrification dans les sols, et de l'influence des produits chimiques sur ces processus (ISO 14238:2012)

Bodenbeschaffenheit - Biologische Verfahren - Bestimmung der Stickstoffmineralisierung und -nitrifizierung in Böden und der Einflüsse von Chemikalien auf diese Prozesse (ISO 14238:2012)

This European Standard was approved by CEN on 10 November 2013.

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EN ISO 14238:2013 (E)

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Foreword

The text of ISO 14238:2012 has been prepared by Technical Committee ISO/TC 190 "Soil quality" of the International Organisation for Standardization (ISO) and has been taken over as EN ISO 14238:2013 by Technical Committee CEN/TC 345 "Characterization of soils" 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of an identical text or by endorsement, at the latest by June 2014, and conflicting national standards shall be withdrawn at the latest by June 2014.

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Endorsement notice

The text of ISO 14238:2012 has been approved by CEN as EN ISO 14238:2013 without any modification.

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INTERNATIONAL STANDARD

ISO
14238

Second edition
2012-08-01

Soil quality — Biological methods — Determination of nitrogen mineralization and nitrification in soils and the influence of chemicals on these processes

*Qualité du sol — Méthodes biologiques — Détermination de la
minéralisation de l'azote et de la nitrification dans les sols, et de
l'influence des produits chimiques sur ces processus*



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ISO 14238:2012(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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 14238 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 4, *Biological methods*.

This second edition cancels and replaces the first edition (ISO 14238:1997), which has been technically revised.

Introduction

Soil consists of both living and non-living components which exist in a complex and heterogeneous environment. Microorganisms in the soil are mainly responsible for cycling of some nutrients and thus play an essential role in the maintenance of soil fertility. One of the most important microbial processes in soil is the mineralization of nitrogen contained in organic forms to ammonium (ammonification) and thereafter to nitrite and nitrate (nitrification). Clearly, any long-term interference with this process could influence soil fertility.

Soil quality — Biological methods — Determination of nitrogen mineralization and nitrification in soils and the influence of chemicals on these processes

1 Scope

This International Standard specifies laboratory procedures for measuring the mineralization and nitrification of nitrogen by the soil microbiota.

For investigations on the evaluation of soil quality or on effects of contamination, a procedure is given to measure the rates and extent of N-mineralization in soil or soils of known or unknown quality.

For investigation of the potential toxicity of chemicals to N-mineralization in soils, a simple procedure is given which allows the impact of single chemicals to be assessed and provides a basis for comparison of the toxicities of different chemicals.

2 Normative references

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

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*

ISO 10390, *Soil quality — Determination of pH*

ISO 10694, *Soil quality — Determination of organic and total carbon after dry combustion (elementary analysis)*

ISO 11260, *Soil quality — Determination of effective cation exchange capacity and base saturation level using barium chloride solution*

ISO 11261, *Soil quality — Determination of total nitrogen — Modified Kjeldahl method*

ISO 11274, *Soil quality — Determination of the water-retention characteristic — Laboratory methods*

ISO 11277, *Soil quality — Determination of particle size distribution in mineral soil material — Method by sieving and sedimentation*

ISO 11465, *Soil quality — Determination of dry matter and water content on mass basis — Gravimetric method*

3 Terms and definitions

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

3.1

nitrogen mineralization

N-mineralization

microbial degradation of an organic substance containing nitrogen, via the processes of ammonification and nitrification, to the respective inorganic endproducts, specifically ammonium and nitrate

3.2

ammonification

microbial degradation of organic nitrogen to ammonium

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