



NSAI
Standards

Irish Standard
I.S. EN ISO 20130:2020

Soil quality - Measurement of enzyme activity patterns in soil samples using colorimetric substrates in micro-well plates (ISO 20130:2018)

I.S. EN ISO 20130:2020

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National Foreword

I.S. EN ISO 20130:2020 is the adopted Irish version of the European Document EN ISO 20130:2020, Soil quality - Measurement of enzyme activity patterns in soil samples using colorimetric substrates in micro-well plates (ISO 20130:2018)

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EUROPEAN STANDARD

EN ISO 20130

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2020

ICS 13.080.30

English Version

**Soil quality - Measurement of enzyme activity patterns in
soil samples using colorimetric substrates in micro-well
plates (ISO 20130:2018)**

Qualité du sol - Mesure de l'activité enzymatique dans
des échantillons de sol en utilisant des substrats
colorimétriques (ISO 20130:2018)

Bodenbeschaffenheit - Messung von
Enzymaktivitätsmustern in Bodenproben mit
kolorimetrischen Substraten in Mikrotiterplatten (ISO
20130:2018)

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EN ISO 20130:2020 (E)

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European foreword

The text of ISO 20130:2018 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 20130:2020 by Technical Committee CEN/TC 444 "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of an identical text or by endorsement, at the latest by November 2020, and conflicting national standards shall be withdrawn at the latest by November 2020.

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**INTERNATIONAL
STANDARD**

**ISO
20130**

First edition
2018-07

**Soil quality — Measurement of
enzyme activity patterns in soil
samples using colorimetric substrates
in micro-well plates**

*Qualité du sol — Mesure de l'activité enzymatique dans des
échantillons de sol en utilisant des substrats colorimétriques*



Reference number
ISO 20130:2018(E)

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ISO 20130:2018(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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This document was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 4, *Biological characterization*.

Introduction

Microorganisms are responsible for many key processes in the cycle of elements. Enzymes are responsible for the degradation of organic molecules and their mineralization. The main postulate is the microbial origin of soil enzymes, even if plant root exudates include enzymes. Extracellular enzymes in soil play key roles in the biodegradation of organic macromolecules. The simultaneous monitoring of several enzyme activities important in the biodegradation of organic compounds and mineralization of carbon, nitrogen, phosphorus and sulfur in soil may reveal harmful effects caused by chemicals and other anthropogenic impacts. However, the measurements carried out under selected laboratory conditions using artificial substrates cannot be a substitute for the actual rate of enzymatic processes in soil *in situ*.

Soil quality — Measurement of enzyme activity patterns in soil samples using colorimetric substrates in micro-well plates

1 Scope

This document specifies a method for the measurement of several hydrolase activities (arylamidase, arylsulfatase, β -galactosidase, α -glucosidase, β -glucosidase, N-acetyl-glucosaminidase, acid, alkaline and global phosphatases, urease) simultaneously (or not) in soil samples, using colorimetric substrates. Enzyme activities of soil vary seasonally and depend on soil chemical, physical and biological characteristics. This method can be applied either to detect harmful effects on soil enzyme activities derived from toxic substances or other anthropogenic agents in contaminated soils against a control soil, or to test chemicals.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 18400-206, *Soil quality — Sampling — Part 206: Collection, handling and storage of soil under aerobic conditions for the assessment of microbiological processes, biomass and diversity in the laboratory*

3 Terms and definitions, symbols and abbreviated terms

3.1 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.2 Symbols and abbreviated terms

ARN	Arylamidase
ARS	Arylsulfatase
E.C.	Enzyme code number by the Nomenclature Committee of the International Union of Biochemistry and Molecular Biology (NC-IUBMB)
NAG	N-acetyl-glucosaminidase
PAC	acid phosphatase
PAK	alkaline phosphatase
PHOS	phosphatase

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