INTERNATIONAL STANDARD

ISO 10390

Third edition
2021-04

Soil, treated biowaste and sludge – Determination of pH

Sols, biodéchets traités et boues — Détermination du pH

Reference number
ISO 10390:2021(E)

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Published in Switzerland

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Foreword

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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 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.

This document was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 3, *Chemical and physical characterization.*

This third edition cancels and replaces the second edition (ISO 10390:2005), which has been technically revised.The main changes compared to the previous edition are as follows:

— The content of ISO 10390:2005 and EN 15933:2012 were merged;

— The scope was widened to include sludge and treated biowaste;

— Additional validation data for soil, sludge and treated biowaste were included;

— The text was editorially revised.

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.

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Soil, treated biowaste and sludge – Determination of pH

1 Scope

This document specifies an instrumental method for the routine determination of pH within the range pH 2 to pH 12 using a glass electrode in a 1:5 (volume fraction) suspension of soil, sludge and treated biowaste in either water (pH in H_2O), in 1 mol/l potassium chloride solution (pH in KCl) or in 0,01 mol/l calcium chloride solution (pH in $CaCl_2$).

This document is applicable to all types of air-dried soil and treated biowaste samples.

NOTE For example, pretreated in accordance with ISO 11464 or EN 16179 or EN 15002.

2 Normative references

There are no normative references in this document.

3 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:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Principle

A suspension of a test portion is made up in five times its volume with one of the following solutions:

— water;

— a solution of potassium chloride (KCl) in water, c = 1 mol/l;

— a solution of calcium chloride ($CaCI_2$) in water, c = 0,01 mol/l.

The pH of the suspension is measured using a pH-meter.

NOTE 1 To make the procedure generally applicable to all types of soil, treated biowaste samples and sludges except liquid sludge, a volume-to-volume shaking ratio is chosen because all test samples can be treated in the same way. If a mass-to-volume ratio were chosen, the weighed amount of test sample would have to be adapted for e.g. soils with a low density, to enable the preparation of the suspension. For the purpose of this document, it is sufficiently accurate to measure the required volume of test portion with a measuring spoon.

NOTE 2 In samples with a high content of charged particles (e.g. organic matter, clay) the suspension effect can modify the potential difference between the electrodes, and thereby have an influence on the recorded pH value. This problem is minimized by gentle stirring of the suspension. For calcareous material, carbon dioxide can be absorbed by the suspension, which makes it difficult to reach an equilibrium value. Other sources of error are associated with materials containing sulfidic minerals or volatile acids.

5 Reagents

Use only reagents of recognized analytical grade.

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