

**Soil quality - Determination of exchangeable acidity in barium chloride extracts (ISO 14254:2001)**

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 14254:2011 sisaldab Euroopa standardi EN ISO 14254:2011 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 29.07.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 22.06.2011.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 14254:2011 consists of the English text of the European standard EN ISO 14254:2011.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 29.07.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 22.06.2011.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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ICS 13.080.10

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ICS 13.080.10

English Version

## Soil quality - Determination of exchangeable acidity in barium chloride extracts (ISO 14254:2001)

Qualité du sol - Détermination de l'acidité échangeable dans un extrait au chlorure de baryum (ISO 14254:2001)

Bodenbeschaffenheit - Bestimmung der Austauschacidität in Bariumchloridextrakten (ISO 14254:2001)

This European Standard was approved by CEN on 3 June 2011.

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## Foreword

The text of ISO 14254:2001 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 14254:2011 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of an identical text or by endorsement, at the latest by December 2011, and conflicting national standards shall be withdrawn at the latest by December 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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### Endorsement notice

The text of ISO 14254:2001 has been approved by CEN as a EN ISO 14254:2011 without any modification.

# Soil quality — Determination of exchangeable acidity in barium chloride extracts

## 1 Scope

This International Standard specifies a method for the determination of exchangeable acidity in barium chloride extracts of soil samples obtained according to ISO 11260.

The procedure described herein mainly concerns the determination of total exchangeable acidity by means of a fixed-pH end-point titration (see note). Two optional procedures are also given, describing respectively, determinations of free  $H^+$  acidity and of aluminium in the extracts.

This International Standard is applicable to all types of air-dry soil samples which have been pretreated in accordance with ISO 11464.

NOTE Titration of exchangeable acidity by means of a fixed-pH end-point may not be specific to a given acid species. The end-point pH value retained is 7,8, corresponding to complete precipitation of  $Al^{+3}$  ions in synthetic solutions. Titration of soil extracts to this pH may also include some more weakly ionized species or weak acid organic compounds.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

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

ISO 11464, *Soil quality — Pretreatment of samples for physico-chemical analyses*

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

## 3 Principle

The soil sample is extracted in accordance with ISO 11260. The  $0,1 \text{ mol} \cdot \text{l}^{-1}$  extract is titrated with a  $0,05 \text{ mol} \cdot \text{l}^{-1}$  NaOH solution up to  $\text{pH} = 7,8$ . The use of phenolphthalein as indicator is allowed, but shall be specified in the test report.

An alternative method for determination of the free  $H^+$  acidity is proposed, in which sodium fluoride is added to the soil extract before the titration ( $\text{BaF}_2$  precipitates but an excess of NaF is not necessary). Aluminium ions are complexed and only the  $H^+$  acidity is detected during the titration process.

Two other optional methods for the determination of aluminium are proposed, using respectively flame atomic absorption spectrometry and inductively coupled plasma emission spectrometry.