

**Pinnas, sete ja töödeldud biojäätmel. pH määramine**

**Sludge, treated biowaste and soil - Determination of pH**

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## EESTI STANDARDI EESSÕNA

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See Eesti standard EVS-EN 15933:2012 sisaldab Euroopa standardi EN 15933:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 15933:2012 consists of the English text of the European standard EN 15933:2012.
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English Version

**Sludge, treated biowaste and soil - Determination of pH**

Boue, biodéchets traités et sol - Détermination du pH

Schlamm, behandelter Bioabfall und Boden - Bestimmung  
des pH-Werts

This European Standard was approved by CEN on 24 May 2012.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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## Foreword

This document (EN 15933:2012) has been prepared by Technical Committee CEN/TC 400 "Project Committee - Horizontal standards in the fields of sludge, biowaste and soil", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by February 2013, and conflicting national standards shall be withdrawn at the latest by February 2013.

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.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

The preparation of this document by CEN is based on a mandate by the European Commission (Mandate M/330), which assigned the development of standards on sampling and analytical methods for hygienic and biological parameters as well as inorganic and organic determinants, aiming to make these standards applicable to sludge, treated biowaste and soil as far as this is technically feasible.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

This European Standard is applicable and validated for several types of matrices as indicated in Table 1 (see also Annex A for the results of the validation).

**Table 1 — Matrices for which this European Standard is applicable and validated**

Matrix	Materials used for validation
Sludge	Municipal sludge
Biowaste	Compost
Soil	Arable soil
	Forest soil

**WARNING —** Persons using this European Standard should be familiar with usual laboratory practice. This European Standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

**IMPORTANT —** It is absolutely essential that tests conducted according to this European Standard be carried out by suitably trained staff.

## 1 Scope

This European Standard specifies a method for the determination of pH within the range pH 2 to pH 12 in a suspension of sludge, treated biowaste or soil in either water (pH-H<sub>2</sub>O), or a 0,01 mol/l calcium chloride solution (pH-CaCl<sub>2</sub>).

This European Standard is applicable to sludge, treated biowaste and fresh or air-dry soil samples.

## 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.

EN 16179, *Sludge, treated biowaste and soil — Guidance for sample pretreatment*

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

## 3 Principle

The pH is measured in a suspension of a test portion which is made up in 5 times its volume of either water or a 0,01-mol/l-solution of calcium chloride.

**NOTE** To make the procedure generally applicable to all types of sludge, treated biowaste and soil samples, a volume fraction ratio is chosen because then all types of samples can be treated in the same way. For the purpose of this standard, taking the required volume of test portion with a measuring spoon is sufficiently accurate.

## 4 Interferences

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 may 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, unless otherwise specified.

### 5.1 Water, grade 2 as specified in EN ISO 3696.

The water shall have a specific electric conductivity  $\leq 0,2$  mS/m at 25 °C, and pH  $\leq 5,6$ .

### 5.2 Calcium chloride solution, $c(\text{CaCl}_2) = 0,01$ mol/l.

Dissolve 1,47 g calcium chloride dihydrate ( $\text{CaCl}_2 \cdot 2 \text{H}_2\text{O}$ ) in water (5.1) and dilute to 1 000 ml.

This solution may be stored for several months in a refrigerator in a closed volumetric flask or other type of closed glass vessel.