SLOVENSKI STANDARD
SIST EN 13037:2001

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Izboljševalci tal in rastni substrati - Določevanje pH vrednosti

Soil improvers and growing media - Determination of pH

Bodenverbesserungsmittel und Kultursubstrate - Bestimmung des pH-Wertes

Amendements du sol et supports de culture - Détermination du pH

Ta slovenski standard je istoveten z: **EN 13037:1999**

ICS:

65.080 Gnojila Fertilizers

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Soil improvers and growing media - Determination of pH

Amendements du sol et supports de culture - Détermination du pH

Bodenverbesserungsmittel und Kultursubstrate - Bestimmung des pH-Wertes

This European Standard was approved by CEN on 23 October 1999.

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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 Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 223 "Soil improvers and growing media", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by June 2000, and conflicting national standards shall be withdrawn at the latest by June 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies an instrumental method for the routine determination of pH in a suspension of soil improvers or growing media.

NOTE 1 The method is not applicable to liming materials or sewage sludges and is not suitable for materials like rockwool and foam slabs.

NOTE 2 The requirements of the standard may differ from the national legal requirements for the declaration of the products concerned.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 13040:1999	Soil improvers and growing media - Sample preparation for chemical and physical tests, determination of dry matter content, moisture content and laboratory compacted bulk density
EN ISO 3696	Water for analytical laboratory use - Specification and test methods. (ISO 3696:1987)
ISO 1770	Solid stem general purpose thermometers.

3 Terms and definitions

For the purposes of this standard the terms and definitions given in EN 13040 : 1999 apply.

4 Principle

A sample is extracted with water at 22 °C ± 3,0 °C in an extraction ratio of 1+5 (*V/V*). The pH of the suspension is measured using a pH meter.

5 Reagents

Use only reagents of recognized analytical grade.

5.1 Water with a specific conductivity not higher than 0,2 mS/m at 25 °C and a pH greater than 5,6 (grade 2 water according to EN ISO 3696).

5.2 Buffer solution, pH 4,00 at 20 °C.

Dissolve 10,21 g of potassium hydrogen phthalate ($C_8H_5KO_4$) in water (**5.1**) and dilute to 1000 ml in a volumetric flask.

The potassium hydrogen phthalate shall be dried before use for 2 h at 110 °C to 120 °C.

5.3 Buffer solution, pH 7,00 at 20 °C.

Dissolve 3,800 g of potassium dihydrogen phosphate (KH_2PO_4) and 3,415 g disodium hydrogen phosphate (Na_2HPO_4) in water (**5.1**) and dilute to 1000 ml in a volumetric flask.

The potassium dihydrogen phosphate shall be dried before use for 2 h at 110 °C to 120 °C.

5.4 Buffer solution, pH 9,22 at 20 °C.

Dissolve 3,800 g of disodium tetraborate decahydrate ($Na_2B_4O_7.10H_2O$) in water (**5.1**) and dilute to 1000 ml in a volumetric flask.

NOTE 1 Buffers in the form of tablets etc. that are commercially available may also be used.

NOTE 2 The buffer solutions (**5.2, 5.3** and **5.4**) are stable for one month if stored in polyethylene bottles in a refrigerator.

NOTE 3 If disodium tetraborate is stored for a long time there is the possibility of loss of water of crystallisation.

6 Apparatus

Usual laboratory apparatus and in particular the following.

6.1 pH-meter, with slope adjustment and temperature control.

6.2 Analytical balance, with a scale interval of 0,01 g.

6.3 Glass electrode and a reference electrode or a combined electrode of equivalent performance.

NOTE 1 In the case of extreme pH values (greater than 10) an electrode specifically designed for that range should be used.

NOTE 2 The use of electrodes in systems containing soil increases the danger of contamination leading to deterioration of performance.

6.4 Thermometer, capable of measuring to the nearest 1 °C, conforming to type C of ISO 1770.

6.5 Plastic or glass containers of sufficient capacity to accommodate the volume of the sample, extractant and 10 % air volume.

6.6 Shaking or mixing machine, capable of holding container (**6.5**) and maintaining the sample in suspension without damaging the structure of the sample.

7 Preparation

7.1 Extraction

Prepare the sample in accordance with EN 13040 : 1999 and determine the compacted laboratory bulk density of the sample in accordance with - annex A of EN 13040 : 1999.

7.1.1 Test samples passing through a 20 mm sieve

Take a weight equivalent to 60 ml of the sample volume to the nearest 1 g and transfer to the container (**6.5**). Add 300 ml of water (**5.1**), secure the cap and shake for 1 h on the shaking machine (**6.6**) at 22 °C ± 3 °C.

7.1.2 Test samples passing through a 40 mm sieve

Take a weight equivalent to 250 ml of the sample volume to the nearest 1 g and transfer to the container (**6.5**). Add 1250 ml of water (**5.1**), secure the cap and shake for 1 h on the shaking machine (**6.6**) at 22 °C ± 3 °C.

8 Procedure

8.1 Calibration of the pH-meter

Calibrate the pH-meter as prescribed in the manufacturer's manual, using at least two of the buffer solutions **5.2** to **5.4** appropriate to the sample under test.

NOTE With electrodes that are in good condition, equilibrium is normally achieved within 30 seconds.

8.2 Measurement of the pH

Adjust the pH-meter as indicated in the manufacturer's manual. Measure the temperature of the suspension taking care to ensure that the temperature of the buffer solutions and the sample suspensions do not differ by more than 1 °C. Agitate the suspension thoroughly just before the measurement and measure the pH in the settling suspension. Read the pH after stabilisation is reached, i.e. when the reading does not change by more than 0,1 of a pH unit over 15 s . Note the values to 1 decimal place.

9 Precision

The repeatability and reproducibility of the pH in separately prepared samples should be in accordance with Table A 1.

A summary of the results of an interlaboratory trial to determine the precision of the method in accordance with ISO 5725 are given in Annex A.

NOTE The values derived from the interlaboratory trial may not be applicable to concentrations and matrices other than those given.

10 Test report

The test report shall contain the following information:

a) a reference to this European Standard;
b) all information necessary for complete identification of the sample;
c) the results of the determination expressed to the nearest 0,1 pH-unit;
d) details of any operations not specified in the European Standard or regarded as optional, as well as any factor which may have affected the results.
e) the laboratory compacted bulk density