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Soil improvers and growing media - Determination of physical properties - Dry bulk density, air volume, water volume, shrinkage value and total pore space

Bodenverbesserungsmittel und Kultursubstrate - Bestimmung der physikalischen Eigenschaften - Rohdichte (trocken), Luftkapazität, Wasserkapazität, Schrumpfungswert und Gesamtporenvolumen

Amendements du sol et supports de culture - Détermination des propriétés physiques - Masse volumique apparente sèche, volume d'air, volume d'eau, valeur de rétraction et porosité totale

Ta slovenski standard je istoveten z: EN 13041:1999/A1:2006

ICS:

65.080

SIST EN 13041:2001/A1:2006

en

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ICS 65.080

English Version

Soil improvers and growing media - Determination of physical properties - Dry bulk density, air volume, water volume, shrinkage value and total pore space

Amendements du sol et supports de culture -
Détermination des propriétés physiques - Masse volumique
apparente sèche, volume d'air, volume d'eau, valeur de
rétraction et porosité totale

Bodenverbesserungsmittel und Kultursubstrate -
Bestimmung der physikalischen Eigenschaften - Rohdichte
(trocken), Luftkapazität, Wasserkapazität,
Schrumpfungswert und Gesamtporenvolumen

This amendment A1 modifies the European Standard EN 13041:1999; it was approved by CEN on 18 May 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This amendment 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.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 13041:1999/A1:2006) has been prepared by Technical Committee CEN/TC 223 "Soil improvers and growing media", the secretariat of which is held by BSI.

This Amendment to the European Standard EN 13041:1999 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2006, and conflicting national standards shall be withdrawn at the latest by December 2006.

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

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4 Principle

After the last sentence, add the following new sentence

After –10 cm water pressure head it is optional also to apply –50 and –100 cm water pressure head respectively.

5.4 Sand suction table

Delete the existing text and substitute the following:

For example prepare the sand suction table in accordance with Annex A, using the fine sand to obtain the required suction. The pressure head in the plastic tubes (–50 cm) is measured from the bottom of the tube. The pressure head in the rings (–10 cm, –50 cm and –100 cm) is measured from the middle of the lower ring (Figure A.3). The setting of the pressure head can be checked with a tensiometer or pressure transducer.

7 Procedure

Modify the title of 7.3 as follows:

7.3 Suction –10 cm water pressure head

Delete existing 7.4.3 and 7.4.4. Add new 7.5 and 7.6 as follows:

7.5 Optional suction –50 and –100 cm water pressure head

NOTE After –10 cm water pressure head it is possible also to determine the air and water volume at –50 and –100 cm water pressure head. The following procedure (7.5) can be skipped only if values for water and air volume at –10 cm are necessary.

7.5.1 Carefully place the ring to the sand bath (5.4) making sure there is contact between the sand and the lower part of the ring. Cover the sand box and apply a –50 cm pressure head, measured from the middle of the ring.

7.5.2 It is important to regularly check that no air bubbles are present in the suction level regulator tubes.

7.5.3 Apply the suction until equilibrium is reached. A minimum of 48 h and up to 72 h is required.

7.5.4 Record the mass (m_3).

7.5.5 Carefully place the ring to the sand bath (5.4) making sure there is contact between the sand and the lower part of the ring. Cover the sand box and apply a –100 cm pressure head, measured from the middle of the ring.

7.5.6 It is important to regularly check that no air bubbles are present in the suction level regulator tubes.

7.5.7 Apply the suction until equilibrium is reached. A minimum of 48 h and up to 72 h is required.

7.5.8 Record the mass (m_4).

7.6 Drying

7.6.1 Place in the drying oven (5.5) without altering the structure and dry at (103 ± 2) °C to constant mass (m_5).

7.6.2 Remove the ring and measure with a calliper gauge the mean height (quadruplicate measurements) (h_2) and mean diameter (triplicate measurements; top middle and bottom) (d_2) of the dried samples.

NOTE This procedure cannot be carried out with some granular materials because they do not retain their shape on drying. In these cases, it is recommended to measure the height prior to drying.

7.5 Organic matter (W_{om})

Renumber existing subclause as 7.7.

7.6 Ash content (W_{ash})

Renumber existing subclause as 7.8.

8 Expression of results

8.4 Particle density

Delete the first line and replace with the following:

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Calculate the particle density in duplicate using the following equation:

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8.5 Total pore space

Correct equation 5 to read as follows:

$$P_s = \left[1 - \left(\frac{D_{BD}}{P_D} \right) \right] \times 100$$

Delete the existing definition of the term P_D and replace with the following:

P_D is the mean value of the particle density in kilograms per cubic metre (kg/m^3)

8.6 Water volume

Delete the existing text and replace with the following:

Calculate the water volume after applying -10 and optional at -50 and -100 cm pressure head using the following equations:

$$W_v \text{ at } -10 \text{ cm pressure head} = \frac{(m_2 - m_5)}{V_1} \times 100 \quad (7)$$

$$W_v \text{ at } -50 \text{ cm pressure head} = \frac{(m_3 - m_5)}{V_1} \times 100 \quad (8)$$

$$W_v \text{ at } -100 \text{ cm pressure head} = \frac{(m_4 - m_5)}{V_1} \times 100 \quad (9)$$

where

W_v is the water volume content expressed as a percentage by volume, % (V/V), wet sample at -10, -50 or -100 centimetre pressure head;

V_1 is the volume in cubic centimetres of the sample ring;

m_2 is the mass in grams of the wet sample plus sample ring at -10 centimetre pressure head;

m_3 is the mass in grams of the wet sample plus sample ring at -50 centimetre pressure head;

m_4 is the mass in grams of the wet sample plus sample ring at -100 centimetre pressure head;

m_5 is the mass in grams of the dried sample plus sample ring.

8.7 Air volume

Delete the existing text and replace with the following:

Calculate the air volume content in the sample after applying -10 centimetre pressure head and optional at -50 and -100 cm pressure head using the following equations:

$$A_v \text{ at } -10 \text{ cm pressure head} = P_s - W_v \text{ at } -10 \text{ cm pressure head} \quad (10)$$

$$A_v \text{ at } -50 \text{ cm pressure head} = P_s - W_v \text{ at } -50 \text{ cm pressure head} \quad (11)$$

$$A_v \text{ at } -100 \text{ cm pressure head} = P_s - W_v \text{ at } -100 \text{ cm pressure head} \quad (12)$$

where

A_v is the air volumetric content expressed as a percentage by volume, % (V/V), wet sample at -10, -50 or -100 centimetre pressure head;

P_s is the total pore space expressed as a percentage by volume, % (V/V), wet sample at -10 centimetre pressure head (as defined in 8.5);

W_v is the water volume content expressed as a percentage by volume, % (V/V), wet sample at -10, -50 or -100 centimetre pressure (as defined in 8.6).

9 Number of replicates

Add a new paragraph as follows:

The calculation of the particle density should be carried out on the basis of two replicates on both results to be reported.

Bibliography

Add

[4] Wever, G. 2005. *Interlaboratory study EN-Methods. Analysis of Growing Media and Soil Improvers, Amendment EN 13041 pressure heads -50 cm and -100 cm. CEN/TC 223 WG4 document N60.*

Annex B

Add new Annex B as follows:

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