SLOVENSKI STANDARD

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Izboljġevalci tal in rastni substrati - Priprava vzorcev za kemijske in fizikalne preskuse, doloļevanje suhe snovi, vlage in laboratorijsko stisnjene prostorninske gostote

Soil improvers and growing media - Sample preparation for chemical and physical tests, determination of dry matter content, moisture content and laboratory compacted bulk density

Bodenverbesserungsmittel und Kultursubstrate - Probenherstellung für chemische und physikalische Untersuchungen, Bestimmung des Trockenrückstands, des Feuchtigkeitsgehaltes und der Laborschüttdichte

Amendements organiques et supports de culture - Préparation des échantillons pour les essais physiques et chimiques, détermination de la teneur en matiere seche, du taux d'humidité et de la masse volumique compactée en laboratoire

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Foreword

This document (EN 13040:2007) 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of an identical text or by endorsement, at the latest by April 2008, and conflicting national standards shall be withdrawn at the latest by April 2008.

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 supersedes EN 13040:1999.

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, 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 the United Kingdom.

Safety warning

Take care when handling samples that may contain sharps or are of a dusty nature. Samples should be handled with latex gloves and in the case of dusty materials with mask and gloves.

1 Scope

This European Standard specifies a routine method for preparing a sample of soil improver or growing media prior to chemical analysis and physical testing. The procedures described herein apply only to those samples that are supplied to a laboratory in the form in which they will be used for their intended purpose.

NOTE 1 This method is not applicable to liming materials and is not suitable for materials like rockwool and foam slabs.

NOTE 2 The determination of the laboratory compacted bulk density is given in Annex A.

NOTE 3 The results of an interlaboratory trial to determine moisture content are given in Annex B.

NOTE 4 The results of an interlaboratory trial to determine compacted laboratory bulk density are given in Annex B.

NOTE 5 Attention is drawn to the possible existence of national legislation for the declaration of specific products, which could differ from the general requirements of this European Standard.

2 Normative references

The following reference documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12579:1999, *Soil improvers and growing media — Sampling*

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

3 Terms and definitions

For the purposes of this standard, the terms and definitions in EN 12579:1999 and the following apply.

3.1
test sample
sample prepared from the laboratory sample and from which test portions will be taken

3.2
test portion
quantity of material drawn from the test sample (or from the laboratory sample if both are the same) and on which the tests or observations are actually carried out

3.3
laboratory compacted bulk density
density, expressed in grams per litre of the material as determined in the laboratory using a 1 l cylinder; the sample being compacted under defined conditions

4 Principle

The laboratory sample is coded and sub-divided to prepare the test sample in such a manner as to be representative of the sample as submitted to the laboratory. The sample's intrinsic structure shall be maintained whenever possible.

5 Sampling

The laboratory sample shall be obtained in accordance with EN 12579.

6 Sample reception

Upon receipt of the laboratory sample, the laboratory shall confirm that the sample relates to the accompanying documentation. The sampler shall submit with the sample, at least the following minimum requirements:

a) name of the client;

b) to whom the results shall be reported if different from a) above;

c) place and date the sample was taken;

d) name of the sampler;

e) discrete sample identification; and

f) analysis required.

The laboratory shall confirm that a sufficient sample has been provided for the analyses to be undertaken by recording the date the sample was received and giving the sample a unique laboratory identification code. This code shall be recorded on all subsequent sub sample containers and on the documentation supplied with the sample. Analysis shall be undertaken within 2 weeks of receipt of the sample.

7 Transportation and storage of samples

The laboratory sample shall be transported and stored without compaction or any other treatment which may irreversibly alter its moisture content, particle size, packing characteristics or any feature which affects density.

A sub-sample or sample of not less than 5 l, as submitted to the laboratory shall be stored so that it shall not undergo any further decomposition, physical damage, hydration or dehydration. Recommended storage should be in a closed polyethylene bag so that the sample fills the container with no free air at 1 °C to 5 °C, but not frozen. The storage period depends on several factors including what is the normal custom in the analysing laboratory or country. It is recommended that all such samples should be stored for a minimum of 28 days from the date of reporting the results to the client. The expected storage period shall be reported to the client at the time the results are reported.

8 Preparation of the un-dried test sample

8.1 Sample preparation

Thoroughly mix the laboratory sample, gently breaking any lump or agglomerate of the sample that has been caused, by, for example, compression during transportation.

NOTE Care should be taken to avoid breaking intrinsic parts and to avoid a loss of moisture.

If necessary, divide the sample to form sub-samples. Recognized procedures such as coning and quartering shall be used for sub-sampling. The procedure used shall be included in the report. The size of the final test sample shall be large enough to truly represent the laboratory sample and to

provide sufficient uniform material for all defined physical and chemical tests that are required to be carried out. It is unlikely that a laboratory sample of less than 10 l shall be sufficient for all physical and chemical analyses.

During preparation the sample shall not be cut or ground.

8.2 Determination of material exceeding 40 mm

Weigh approximately 1 000 ml of the test sample (m_a) and pass it through a 40 mm square aperture sieve and agitate gently if required.

Record the weight (m_b) of the amount of sample that does not pass the sieve and express this figure (c) as a fraction of the total sub-sample mass. This figure is to be reported.

$$c = \frac{m_b}{m_a} \quad (1)$$

where

m_a is the mass in grams of the sub-sample;

m_b is the mass in grams of material retained on a 40 mm square aperture sieve;

c is the fraction retained on a 40 mm square aperture sieve.

8.3 Test sample passing through a 40 mm square aperture sieve

When 20 % w/w or less of the laboratory sample (8.1) has been retained on the 40 mm sieve, the retained particles shall be physically reduced in equal parts as few times as necessary to permit the entire sample to pass through the sieve.

Thoroughly mix the whole sub-sample with the broken particles that have been retained on the sieve taking care to minimize physical damage to the sample as a whole. Any observed foreign material such as plastic, metal or glass shall be recorded. Include this observation in the test report (13).

8.4 Test sample passing through a 25 mm square aperture sieve

Take approximately 10 l of the test sample (8.1) and pass through a 25 mm sieve. Any particle of the sample > 25 mm and /or flexible fibres > 80 mm shall be physically reduced in equal parts and as few times as are necessary to be ≤ 25 mm and ≤ 80 mm for flexible fibres.

Thoroughly mix the whole sub-sample with the broken particles that have been retained on the sieve taking care to minimize physical damage to the sample as a whole. Any observed foreign material such as plastic, metal or glass shall be recorded. Include this observation in the test report (13).

NOTE This test sample is suitable for physical methods of analyses.

8.5 Test sample passing through a 20 mm square aperture sieve

Take about 5 l of test sample (8.3) and using a scoop, pass the material through a 20 mm screen and agitate gently if required. If more than 10 % volume is retained on the screen then the procedure shall be inappropriate to the material under test. If less than 10 % is retained, this material shall be broken down in equal parts and as few times as necessary to permit the entire sample to pass through the sieve.

9 Preparation of the dried ground (or otherwise size reduced) test sample

9.1 Apparatus

9.1.1 Grinding apparatus, able to grind the whole sub-sample without contamination, e.g. cutting mill, ultracentrifuge mill, pestle and mortar.

9.1.2 Screen or sieve, of diameter 2 mm round hole in accordance with ISO 565.

9.1.3 Ventilated oven, capable of maintaining a temperature of 75 °C ± 5 °C or other means of sample drying

9.2 Procedure

Dry a portion of the test sample (8.1) until it crumbles to the touch, using one of the following methods:

a) at 75 °C ± 5 °C in a ventilated oven; or

b) where it is necessary to prevent losses by conventional oven drying methods, freeze drying or milling in the presence of dry ice.

It shall be recorded with the results when a technique like the type presented in b) is used.

The particle size shall be reduced so that the dried sample is able to pass through the 2 mm mesh sieve (9.1.2). It may be necessary to chop, cut or otherwise reduce large particles prior to milling. For samples that can be milled, ensure that during grinding no heat is generated and no inadvertent sub-sampling occurs, in that some particle sizes are excluded from the milling process either as dust or as excessively hard particles. For samples that cannot be milled, e.g. expanded foam, other means for reducing the particulate size such as knives or scissors may be used.

10 Determination of dry matter content

10.1 Apparatus

10.1.1 Sample tray, capable of holding no less than 50 g of the sample and constructed of material thermally stable up to 150 °C.

10.1.2 Drying oven, ventilated, fan assisted, capable of holding sample trays (10.1.1) and maintaining 103 °C ± 2 °C.

10.1.3 Analytical balance, with a scale interval of 0,01 g and a capacity of weighing 500 g.

10.2 Procedure

Determine the mass of the empty tray (m_T), by heating it to 103 °C in an oven and cool it in the desiccator. After cooling weigh the tray to get (m_T). Transfer approximately 50 g of the mixed prepared sample (8.1) in the tray (10.1.1), spread to an even depth not exceeding 2 cm. and without delay weigh to an accuracy of 0,01 g. (m_W). Place the tray in the oven (10.1.2) and dry until the difference between two successive weighings does not exceed 0,1 g. Record the dry mass of the sample and tray (m_D).

NOTE Loss of volatile matter — Drying the sample at 75 °C and 103 °C may lead to losses of certain volatile components such as free ammonia. Therefore, where these components are to be determined the analyses shall be performed on the un-dried sample.