SLOVENSKI STANDARD

SIST EN 13040:2001

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

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a 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 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.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

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of an identical text or by endorsement, at the latest by June 2000, and conflicting national standards shall be withdrawn at the latest by June 2000.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

Safety warning

Take care when handling samples that may contain sharps or are of a dusty nature. Handling of samples should be performed 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 a soil improver or a growing media prior to chemical analysis and physical testing. The procedures described herein apply only to those samples that are supplied to the laboratory in the form in which they will be used for their intended purpose.

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 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 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 12579	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 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 where ever 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) the name of the client;
b) to whom the results shall be reported if different from a) above;
c) the place and date the sample was taken;
d) the name of the sampler;
e) discrete sample identification and
f) the analysis required.

The laboratory shall confirm that sufficient sample has been provided for the analyses to be undertaken, record the date the sample was received and give 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 such that it shall not undergo any further decomposition, physical damage, hydration or dehydration. It is recommended that storage should be in a closed polythene bag so as the sample fills the container with no free air at 1 °C to 5 °C but not frozen. The period of storage 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 period of storage 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. Care shall be taken not to break intrinsic parts of the sample and to avoid moisture losses. If necessary, sub-divide the sample to form sub-samples. Sub-sampling shall be carried out by any recognized procedure. The procedure to be used shall be included in the report. The size of the final test sample shall be large enough to be truly representative of the laboratory sample and to provide sufficient uniform material for all defined physical, chemical and biological 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.

No cutting or grinding shall be undertaken during preparation.

8.2 Determination of material exceeding 40 mm

Weigh approximately 1000 ml of the test sample (m_a) and pass through a 40 mm square aperture sieve.

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.

$$c = \frac{m_b}{m_a}$$

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

Where 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 and 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 had 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 noted.

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 had 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 noted.

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 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.

9.2 Procedure

Dry a portion of the test sample (**8.1**) at a temperature of 75 °C ± 5 °C in a ventilated oven until it crumbles to the touch.

Mill or grind all the dried sample to pass through the 2 mm mesh sieve (**9.1.2**). It may be necessary to chop, cut or otherwise reduce the sample dimensions prior to milling. Ensure that during the grinding there is no heat generation and that no inadvertent sub-sampling occurs in that some particle sizes are excluded from the milling process either in the form of dust or excessively hard particles. For samples that cannot be milled, e.g. expanded foam, other means for reducing the particulate size may be used, the procedure used shall be recorded.

NOTE 1 **Loss of volatile matter** - Drying the sample at 75 °C and 103 °C may lead to losses of certain components such as free ammonia. Where these components are to be determined the analyses shall be carried out on the un-dried sample.

NOTE 2 Techniques such as freeze drying or milling in the presence of dry ice to prevent losses by conventional oven drying methods may be appropriate in some circumstances. Where such a technique is used it shall be noted with the results.

10 Determination of dry matter content

10.1 Apparatus

10.1.1 Sample tray, capable of holding not less than 50 g of the sample and be 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 a temperature of 103 °C ± 2 °C.

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