



SLOVENSKI STANDARD
oSIST prEN 12580:2021
01-december-2021

Izboljševalci tal in rastni substrati - Določanje količine

Soil improvers and growing media - Determination of a quantity

Bodenverbesserungsmittel und Kultursubstrate - Bestimmung der Menge

Amendements organiques et supports de culture - Détermination de la quantité

Ta slovenski standard je istoveten z: prEN 12580

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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English Version

Soil improvers and growing media - Determination of a quantity

Amendements organiques et supports de culture -
Détermination de la quantité

Bodenverbesserungsmittel und Kultursubstrate -
Bestimmung der Menge

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 223.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 12580:2021) has been prepared by Technical Committee CEN/TC 223 “Soil improvers and growing media”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12580:2013.

In comparison with the previous edition, the following technical modifications have been made:

- the text has been editorially revised, no technical changes to the described method have been made;
- references in Clause 2 and the Bibliography have been updated;
- the terms and definitions have been aligned with CEN/TS 17732:—¹;
- the figure has been replaced by two other figures with an example of the apparatus.

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

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Introduction

Soil improvers and growing media are generally traded by volume as the weight of the product can be greatly affected by the moisture content. It is important for both consumers and traders to know the volume of product being traded. Furthermore, for the cultivation of plants, it is the volume of the product, and not the weight, that is generally important. The volume is calculated from knowing the weight and bulk density of the product, the latter being determined from weighing a known reference volume of product. For those materials traded by reference to its mass, this document recognizes the effects the moisture content can have on the quantity declared. Therefore the principle is that for such transactions any weight should be accompanied by the moisture content so that the solid matter content can be calculated.

As some soil improvers and growing media are compressible (and some might be presented in compressed blocks or bales), it is important that this aspect be addressed in the method of determining the bulk density. A suitably competent person should undertake this testing.

Even for materials traded by volume, the moisture content can have an effect as high moisture levels increase agglomerations, can reduce the ability to decompress or reconstitute materials, reduce their flow characteristics and give higher bulk densities and lower volumes.

NOTE Mass and weight are used interchangeably with the same meaning within this document.

The sampling of all materials prior to quantity determination is covered in EN 12579. The sample preparation is covered in EN 13040.

Quantity determination will be performed as soon as possible after preparation and sampling.

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1 Scope

This document specifies methods for the determination of a quantity of soil improvers and growing media in bulk and in packages. This method is designed with an appropriate precision level so that it can be used to validate any quantity determination made.

This document is applicable to material in any form, reconstituted if necessary, but not to plugs, blocks and slabs sold as such by dimension; for these, see EN 15761.

This document is not applicable for material with more than 10 % (V/V) of particles greater than 60 mm in size; for these, see EN 15238.

The requirements of this document might differ from the national legal requirements for the determination of the products concerned.

Material which has become excessively wet and which cannot be easily broken down into a flowable material will not be suitable for the determination of quantity and might not give a representative result. However, because of the diverse nature and bulk density of these materials, it is not possible to quantify what is 'excessive'.

This document is intended to be used by manufacturers, buyers and enforcement agencies in verifying claims made for these products.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 17732:—¹, *Soil improvers and growing media - Terminology*

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EN 12579:2013, *Soil improvers and growing media - Sampling*

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EN 13040, *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 45501:2015, *Metrological aspects of non-automatic weighing instruments*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CEN/TS 17732:—¹ and the following apply.

3.1

batch

lot

quantity of goods manufactured by the same process under the same conditions, at the same time, and labelled in the same manner and are assumed to have the same characteristics to be sampled using a particular sampling plan

3.2

bulk material

material that is not packaged

¹ Under preparation. Current stage is: FprCEN/TS 17732:2021.

prEN 12580:2021 (E)**3.3****container**

receptacle or vessel in which material is delivered, including a lorry, ship, boat and packaging

3.4

ρ_b

bulk density

indication of how much 1 l of the product weighs, being determined in a standardized way

Note 1 to entry: The bulk density is expressed in grams per litre (g/l) or in kilograms per cubic metre (kg/m³).

Note 2 to entry: 'Bulk density' in this document refers to the apparent density in air (based on conventional mass) and not the density in vacuum.

3.5**package**

container and materials contained therein which are delivered and where the packaging remains with the material after delivery

Note 1 to entry: A package may be a loose-filled sack, a big bale or a compressed block in packaging.

3.6**quantity**

out-turn volume or mass being determined in a standardized way

4 Principle

4.1 For each batch of material, whether for delivery in bulk or in packages, the quantity of material is determined and reported either by volume or by weight.

4.2 The unit of measurement (volume or weight) used for the quantity determination needs to comply with specific regulations.

4.3 Where the quantity declared is by volume then the material is weighed and then sampled and its bulk density is determined. From this information, the volume is then calculated (see Clauses 6 to 10).

4.4 Where the quantity declared is by weight then the moisture content is also determined so that the dry matter weight can be determined and declared (see Clauses 11 to 13).

NOTE The structure of the material can change with time and handling and this can affect the volume of the material.

5 Apparatus

5.1 Measuring cylinder, rigid, $20 \text{ l} \pm 0,4 \text{ l}$ with a height to diameter ratio between 0,9:1 and 1:1. The volume V_1 shall be known to the nearest 10 ml at 20 °C, with an uncertainty of measurement ($k = 2$) of no more than 50 ml.

NOTE 1 A standard 300 mm internal diameter pipe of height 283 mm with an end cap can be suitable.

NOTE 2 The apparent weight of 1 l of water at 20 °C is 997,15 g. Therefore no air buoyancy correction needs to be made.

NOTE 3 Information about the measurement and expression of uncertainty is given in the OIML Guide (G1) to the expression of uncertainty in measurement (sometimes referred to as GUM) [5].

NOTE 4 For convenience and ease of use it is advisable to have handles on the measuring cylinder.

NOTE 5 For stability it is useful to have three short legs/feet on the base of the measuring cylinder.

5.2 Collar, rigid, of the same diameter as the measuring cylinder (5.1) and with a height of $75 \text{ mm} \pm 2 \text{ mm}$, equipped with locating lugs to enable it to sit on the measuring cylinder correctly without friction.

NOTE For convenience and ease of use it is advisable to have two handles on the collar.

5.3 Fall controller, of either $20 \text{ mm} \pm 0,6 \text{ mm}$ or $40 \text{ mm} \pm 1,3 \text{ mm}$ or $60 \text{ mm} \pm 2 \text{ mm}$ mesh size as required (see 8.5), held not more than 50 mm above the collar.

NOTE 1 Wires crossing each other at right angles form the mesh with the appropriately sized square holes.

NOTE 2 For convenience and ease of use it is advisable to have two handles on the fall controller.

The fall controller shall be separated from the measuring cylinder (5.1) with collar (5.2) to avoid jogging or vibrating material in the measuring cylinder during the filling process.

5.4 Equipment to retain the fall controller.

This may be a tripod but there may be other suitable means.

5.5 Weighing instrument.

For packaged material, the weighing instrument shall conform to Table 1 with class III tolerances as specified in EN 45501:2015, unless more restrictive provisions exist in national regulations.

For bulk material, the weighing instrument shall conform to class III of EN 45501:2015.

NOTE National legislation is likely to require that the equipment be verified before use, and so it will be marked with the 'CE' mark and a green 'M' to show it is legal to use for trade purposes, as required by European Directive 2014/31/EU [4].

Table 1 — Maximum scale intervals for weighing instruments

Mass	Maximum scale interval for analogue scales	Maximum scale interval for digital scales
kg	g	g
> 1 to 2,5	10	5
> 2,5 to 5	20	10
> 5 to 10	50	20
> 10 to 40	100	50
> 40	200	100

5.6 Straight-edge, rigid, of rectangular cross section, of thickness not exceeding 5 mm, preferably with a sharp edge, and at least 500 mm long.

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5.7 Strike, transparent sheet of flat material, for instance toughened glass or acrylic glass which is easily large enough to cover the top of the measuring cylinder. Used to calibrate the measuring cylinder.

6 Calibration of the measuring cylinder

To calibrate the measuring cylinder (5.1), place the measuring cylinder and sufficient distilled water together in a room so that the temperature of both stabilizes. Determine the temperature, T . Weigh it empty together with a strike (5.7), mass m_e .

Fill to the brim with water using the strike. When the water level is near the top of the measuring cylinder, start to slide the strike onto the rim of the measuring cylinder and pick up the meniscus of the water on its underside. Filling continues gradually, continuing to slide the strike over the surface of the measuring cylinder so that no air bubbles are trapped under it. The measuring cylinder is completely filled when the strike covers the top of the measuring cylinder without any air being trapped under it.

Weigh the filled measuring cylinder and strike in grams, mass, m_f . Calculate the mass of water using the formula:

$$m_w = m_f - m_e \quad (1)$$

Calculate the volume of water by multiplying by the factor given in Table 2. This gives the volume of the measuring cylinder, V_T , in litres, at the temperature, T , at which it has been calibrated.

Table 2 — Multiplication factor at various temperatures for the calculation of the volume of the measuring cylinder

Temperature °C	Factor
10	1,001 35
11	1,001 45
12	1,001 55
13	1,001 67
14	1,001 81
15	1,001 96
16	1,002 11
17	1,002 29
18	1,002 47
19	1,002 66
20	1,002 86
21	1,003 07
22	1,003 29
23	1,003 52
24	1,003 76