BS EN 12579:2013

BSI Standards Publication

Soil improvers and growing media — Sampling

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee AW/20, Top soil, other growing media and turf.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Foreword

This document (EN 12579:2013) has been prepared by Technical Committee CEN/TC 223 “Soil improvers and growing media”, the secretariat of which is held by ASI.

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of an identical text or by endorsement, at the latest by April 2014, and conflicting national standards shall be withdrawn at the latest by April 2014.

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 12579:1999.

The main changes are listed below:

— more detail in the preparation of the product prior to sampling to ensure more consistent use of the standard’s procedure;

— a flowchart that has been added to assist in the use of the standard;

— takes into account the provisions in EN 15238 (product with particle size greater than 60 mm) and EN 15761 (product in block form).

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

Introduction

Soil improvers and growing media are very difficult to sample because of the variety of materials used and the inhomogeneous materials involved. When packed they are also by their nature and the packaging and palletisation process subject to pressure which results in various degrees of compression which need to be counteracted prior to sampling.

The task is further complicated by the variety of sampling equipment that can be used, the quantity to be represented by the sample and the degree of precision required bearing in mind the cost of testing. A suitably competent person should undertake this sampling.

1 Scope

This European Standard specifies methods for sampling soil improvers and growing media (excluding liming materials) for subsequent determination of quality and quantity. It outlines the principles to be taken into consideration when taking the sample and ensuring an adequate quantity is available for testing.

This standard only applies to material in solid form, including pre-shaped media.

This standard is intended to be used by manufacturers, buyers and enforcement agencies in verifying claims made for these products. It is not intended that it should necessarily be used for the purpose of manufacturing control.

The requirements of this standard may differ from the national legal requirements for the declaration of the product concerned.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
batch
lot
quantity of goods manufactured by the same process under the same conditions and labelled in the same manner and are assumed to have the same characteristics

3.2
consignment
quantity of goods dispatched or received at one time and covered by a particular contract or shipping document

Note 1 to entry: A consignment may be composed of a part of a batch (lot) or one or more batches (lots) of the same material or different materials (products).

3.3
sampled portion
maximum quantity of material (product) from the same batch from which one representative combined sample is taken

3.4
sampling point
point from which the incremental sample is taken

3.5
incremental sample
quantity of material taken form one sampling point

3.6
combined sample
combination of all incremental samples taken from one sampled portion

3.7
final sample
representative part of the combined sample taken from the sampled portion obtained, where necessary, by a process of reduction

3.8
laboratory sample
representative part of the final sample prepared for testing

3.9
bulk material
material that is not packaged

3.10
package
container in which the goods are delivered and which remains with them after delivery

Note 1 to entry: A package may be a loose-filled sack typically up to 100 l, a compressed block or bale and even a 'big bale', typically of 4 m^3.

4 Requirements

4.1 General

Any sample collected from the soil improver or growing medium shall represent the whole of the material.

Special care shall be taken to ensure that all sampling apparatus is clean, dry, and made from material which will not contaminate the soil improver or growing media. Sampling shall be carried out as soon as possible and in such a manner as to preserve the quality aspect for which the sample will be tested.

4.2 Microbiological testing

For microbiological testing all sampling apparatus, including sample containers, should only be sterilised before use if necessary. To avoid cross contamination, a fresh set of sampling apparatus should be used for each sample.

For example, sterilisation is not necessary when using new, unopened plastic bags.

Contact with human skin or fluids should be prevented in case of sampling for human pathogens.

4.3 Moisture content

The moisture content shall subsequently be determined using the method specified in EN 13040.

NOTE 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 cannot give a representative analytical result. However, because of the diverse nature and bulk density of these materials, it is not possible to quantify what is excessive. Examples are mushroom casing or blocking media that have become excessively moist, or material that has become excessively wet in storage.

5 Apparatus

5.1 Shovel, scoop or other sampling device so long as it preserves the characteristic of the product, and is sterilisable for microbiological samples.

5.2 Apparatus for sample division, comprising any suitable equipment for combining and reducing the samples which preserve the characteristic of the product.

6 Procedure

6.1 General

All sampling operations shall be carried out over a sufficiently short period of time and in such a way (subject to the need to bring the material to a flowable state and to facilitate sub-sampling and measurement) as to avoid any alteration in the characteristics of the product delivered or the samples. During sampling all incremental samples shall be stored in a manner that maintains their characteristics.

Figure 1 shows the procedure to be used for product that is both in packages as well as in the loose (bulk) state with references to the relevant clauses.

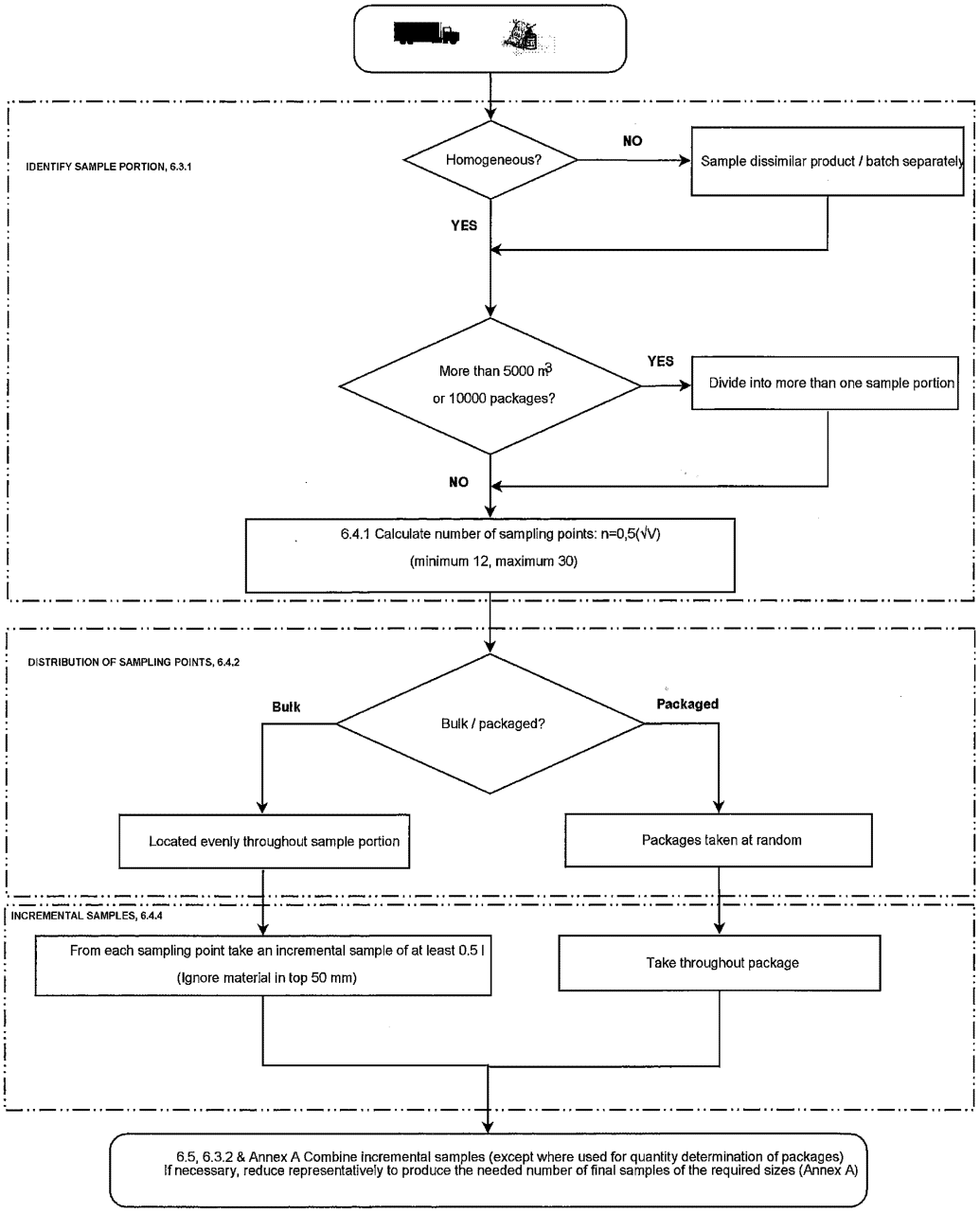

Figure 1 — Procedure to be used for product that is both in packages as well as in the loose (bulk) state

6.2 Location and time of sampling

From the sampled portion to be sampled, calculate the number of incremental samples to be taken (see 6.4.1). The sampling points shall be designated at random.

Sampling of a sampled portion may be undertaken during loading and discharge.

Whenever possible, sampling from the bulk product should be carried out from a moving stream of product, the whole width of the stream being sampled.

6.3 Sampling constraints

6.3.1 Limitations on the sample portion

If the consignment does not appear, either visually or from labelling, to be from the same batch (lot) or consists of different materials (products), then the materials shall be sampled separately.

NOTE Production coding can help in identifying the batch.

A sampled portion shall not be more than 5 000 m^3 (bulk) or 10 000 packages (packaged material) of the same material from the same consignment. If at all possible packages which are damaged or adversely affected by the environment shall not be selected as these may not give representative results (see also NOTE to 4.3).

When sampling packages for quantity determination, each incremental sample shall be treated as a final sample which shall be:

— either the individual package if it exceeds 30 l for product with particle size no greater than 60 mm;

— or the individual package if it exceeds 70 l for product with particle size greater than 60 mm;

— or sufficient packages to give a content of at least 30 l for product no greater than 60 mm, or 70 l for product greater than 60 mm.

6.3.2 Number of final samples

Except for quantity determination, and unless otherwise agreed with the parties concerned, at least three representative final samples shall be taken and distributed as follows:

a) One portion each of the supplier and buyer (receiver or enforcement officer;

b) One portion for an independent tester if a dispute on analysis arises.

6.4 Sampling

6.4.1 Number of sampling points

Take an incremental sample from each sampling point. The number of sampling points (n_{sp}) is calculated using the following formula:

n_{sp} = 0,5 ($V^{0,5}$) rounded up to the nearest whole number

where

V is the nominal quantity of the sampled portion in cubic metres:

- with a minimum n_{sp} = 12;
- and a maximum n_{sp} = 30.

6.4.2 Distribution of sampling points

The sampling points shall be distributed throughout the sampled portion as follows:

a) Bulk material:

Visually divide the sampled portion into the same number of equal portions as the number of sampling points.

b) Packaged material:

Each sampling point shall be in a different randomly selected package.

Where the quantity of a pack is to be determined the sample shall enable the bulk density and quantity of each individually sampled pack to be determined.

More sampling points shall be used if the package content is so small that the required incremental sample size cannot be obtained.

6.4.3 Volume of samples

From each sampling point incremental samples of sufficient volume (at least 0,5 l) shall be taken to ensure the final sample size (see Annex A).

6.4.4 Incremental samples

If the variability of the material is being assessed, the incremental samples shall be treated as separate final samples. Each of the incremental samples shall be of the final sample size (see 6.4.3 and Annex A).

The incremental samples shall be taken carefully so as to preserve the characteristics of the material for the parameter for which it is to be tested (subject to the need to bring the material to a flowable state and to facilitate sub-sampling and measurement) as follows:

a) All material:

Care shall be taken not to degrade the material as this could result in a higher bulk density and a lower volume and higher than expected nutrient and salt levels

b) Reconstitution and preparation of material:

All material (except bulk material that is already in a loose state) shall be reconstituted following the manufacturer's guidance prior to sampling or determination of quantity measurement. In the case of dried and compressed blocked material (such as coir) water should be added as prescribed and the material allowed to swell as directed before sampling and measurement.

Where no manufacturer's instructions are given it is still necessary to obtain an incremental sample which represents the material in a ready-to-use state. How this is achieved will depend on the nature of the pack and the product and subsequent determinations.

For loose filled packs they shall be thoroughly loosed and homogenised before sampling. These packs, which have been squeezed to facilitate palletisation, should first be manually dropped (unopened) on each of the four edges from a height of 20 cm to 30 cm before emptying the contents onto a plastic sheet or into a large enough container. The entire material should then be gently rubbed between the hands into a new pile to break all processing agglomerations and to ensure that the material is homogenised and flowable. Particle sizes that are product specific (coarse peat, coir chips, bark, etc.) and not created by processing shall not be further reduced in size.

c) Bulk material:

Incremental samples shall be taken throughout the depth of the material, ignoring material nearer than 50 mm to any surface.

These materials do not generally require to be loosened unless they have undergone compaction with time.

d) Packaged material:

Randomly take incremental samples from throughout the package.

For packaged material for quantity determination a final sample shall be taken from each package, on which to determine the bulk density and thereafter the quantity.

Big bales (large volumes of compressed material): As larger parts could conglomerate on the edge of the packaging the sampling should be carried out on the whole diameter of the big bale.

For bales, if a bale-breaker is available it can be used.

e) Block form material:

If the material is in block form (but not pre-shaped media), incremental samples shall be taken from the reconstituted material and combined in that form.

f) Pre-shaped media:

Incremental samples of pre-shaped media shall be sampled in that form.

6.5 Final sample

Subject to the provisions below, combine the incremental samples to form a combined sample.

Reduce the combined sample by coning or quartering, or with an apparatus for sample division (see 5.2), to produce the final sample.

The combined pre-shaped media incremental samples are not reduced to form the final sample.

Produce the required number of final samples (see 6.3.2 and 6.4.4).

Prepare the laboratory sample according to EN 13040.

7 Packing and labelling of the final samples

7.1 General

The packing, storage and dispatch of the final sample shall be such as to ensure that the material's characteristics are unaltered at the time of receipt by the testing laboratory. Microbiological samples shall not be frozen and shall be transported in a manner whereby the samples are not subject to extremes of temperature.

Where different transportation and packaging requirements are necessary for the analysis of different characteristics, more than one final sample may be required.

The test method may specify constraints on the final sample packaging.

7.2 Labelling

The sample shall be labelled with the following:

a) an identifying mark;

b) the product description;

c) the manufacturer's reference, and batch number (if available);

d) the date of sampling;

e) the place of sampling;

f) the sampler's identification.

8 Sampling report

8.1 Where sampling has been accomplished, the sampling report shall contain the following:

a) the name of the sampler and the organisation to which he or she belongs;

b) the product description, and whether it was in bulk or in packages;

c) a copy of the label/manufacturers' declaration/packaging;

d) any batch (lot) number and date of manufacturer (if available);

e) the total quantity of product sampled in terms of mass or volume, and if it was not in bulk the number of packages;

f) the sampling plan and number of increments taken, and reference to this standard;

g) any relevant observation made during sampling; including how goods were re-constituted or brought back to a flowable and usable state;

h) the date and time of sampling, and the postal address of the place of sampling;

i) in relation to the sample the identifying mark (see 7.2 a));

j) in relation to the sample the method of sealing, and a description of the seals;

k) the names and addresses of the relevant parties if appropriate;

l) the destination of the laboratory samples and information for the analyst;

m) the name and signature of the person taking the sample.

8.2 Where sampling has not been possible, a report stating the reasons for this shall be produced.

9 Dispatch of samples

The final sample shall be dispatched as soon as possible, unless other requirements are specified in the relevant test methods.

Annex A
(informative)

Final sample size required

Unless otherwise agreed between the parties, the minimum quantity of the final sample for each portion should be as follows:

Test quantity:

a) for chemical analysis: 5 l;

b) for physical analysis: at least 10 l, preferably 20 l;

c) for bio assay: 5 l;

d) for measurement of bulk density:

   1) in accordance with EN 12580, a minimum of 30 l per determination is needed;

   2) in accordance with EN 15238, a minimum of 70 l per determination is needed;

   3) In accordance with EN 15761, a minimum of five mats or 20 replicate blocks.

Bibliography

[1] EN 12580, *Soil improvers and growing media — Determination of a quantity*

[2] EN 15238, *Soil improvers and growing media — Determination of quantity for materials with particle size greater than 60 mm*

[3] EN 15761, *Pre-shaped growing media — Determination of length, width, height, volume and bulk density*

[4] International Organization of Legal Metrology, Recommendation R 87, *Quantity of product in prepackages*

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