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Rastlinski biostimulansi - Vzorčenje in priprava vzorcev - 1. del: Vzorčenje

Plant biostimulants - Sampling and sample preparation - Part 1: Sampling

Biostimulanzien für die pflanzliche Anwendung - Probenahme und Probenvorbereitung - Teil 1: Probenahme

Biostimulants des végétaux - Échantillonnage et préparation des échantillons - Partie 1 : Échantillonnage

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**Plant biostimulants - Sampling and sample preparation -
Part 1: Sampling**

Biostimulants des végétaux - Échantillonnage et
préparation des échantillons - Partie 1 :
Échantillonnage

Biostimulanzien für die pflanzliche Anwendung -
Probenahme und Probenvorbereitung - Teil 1:
Probenahme

This draft Technical Specification is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 455.

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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
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FprCEN/TS 17702-1:2021 (E)**European foreword**

This document (FprCEN/TS 17702-1:2021) has been prepared by Technical Committee CEN/TC 455 “Plant Biostimulants”, the secretariat of which is held by AFNOR.

This document is currently submitted to the Vote on TS.

The CEN/TS 17702 series, *Plant biostimulants - Sampling and sample preparation*, consists of the following parts:

- CEN/TS 17702-1, *Plant biostimulants - Sampling and sample preparation - Part 1: Sampling*;
- CEN/TS 17702-2, *Plant biostimulants - Sampling and sample preparation - Part 2: Sample preparation*.

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Introduction

This document was prepared by the experts of CEN/TC 455 'Plant Biostimulants'. The European Committee for Standardization (CEN) was requested by the European Commission (EC) to draft European standards or European standardization deliverables to support the implementation of Regulation (EU) 2019/1009 of 5 June 2019 laying down rules on the making available on the market of EU fertilising products ("FPR" or "Fertilising Products Regulation").

This request, presented as SR M/564, also contributes to the Communication on "Innovating for Sustainable Growth: A Bio economy for Europe". The Working Group 1 "Sampling", was created to develop a work program as part of this Request. The technical committee CEN/TC 455 'Plant Biostimulants' was established to carry out the work program that will prepare a series of standards. The interest in biostimulants has increased significantly in Europe as a valuable tool to use in agriculture. Standardization was identified as having an important role in order to promote the use of biostimulants. The work of CEN/TC 455 seeks to improve the reliability of the supply chain, thereby improving the confidence of farmers, industry, and consumers in biostimulants, and will promote and support commercialisation of the European biostimulant industry.

This document covers the following aspects of sampling, derived from EN 1482-1:2007, Fertilizers and liming materials – Sampling and sample preparation – Part 1: Sampling and documents indicated. This document is presented in a form adapted to the specificity of plant biostimulants. The titles of the standards are given in the Bibliography.

From a technical point of view, sampling is generally defined as the withdrawal operation, of the part of a "mass", of such dimensions that the properties found in the sample taken are, within the limits of statistical acceptability, the same as those of the mass of origin (representativeness of the sample). In other words, the ultimate purpose of sampling is to allow the collection of representative portions of plant biostimulants to be subject to analysis. Therefore, it fundamentally affects the significance and reliability of the analytical results themselves.

The final results, in fact, must as far as possible refer to the state and conditions in where the material is found at the time of collection, therefore, care must be taken to avoid or minimize possible modifications to the chemical, physical and biological properties of the sample during or after sampling.

In conclusion, for a correct sampling, it is necessary that the sampling and collection of samples take place quickly, if possible, taking necessary precautions to ensure that they are representative of the plant biostimulants to be analysed and that the samples taken are stored in appropriate way. The surfaces, containers and instruments used must be clean and dry.

Furthermore, remind the protection of health and safety in places of work that every intervention must be carried out in compliance with the defined prevention and protection measures (including the use of any suitable PPE), in particular a careful reading of the labels on the product and where available on the safety data sheet.

Figure 1 gives a schematic diagram of the sampling and sample preparation process.

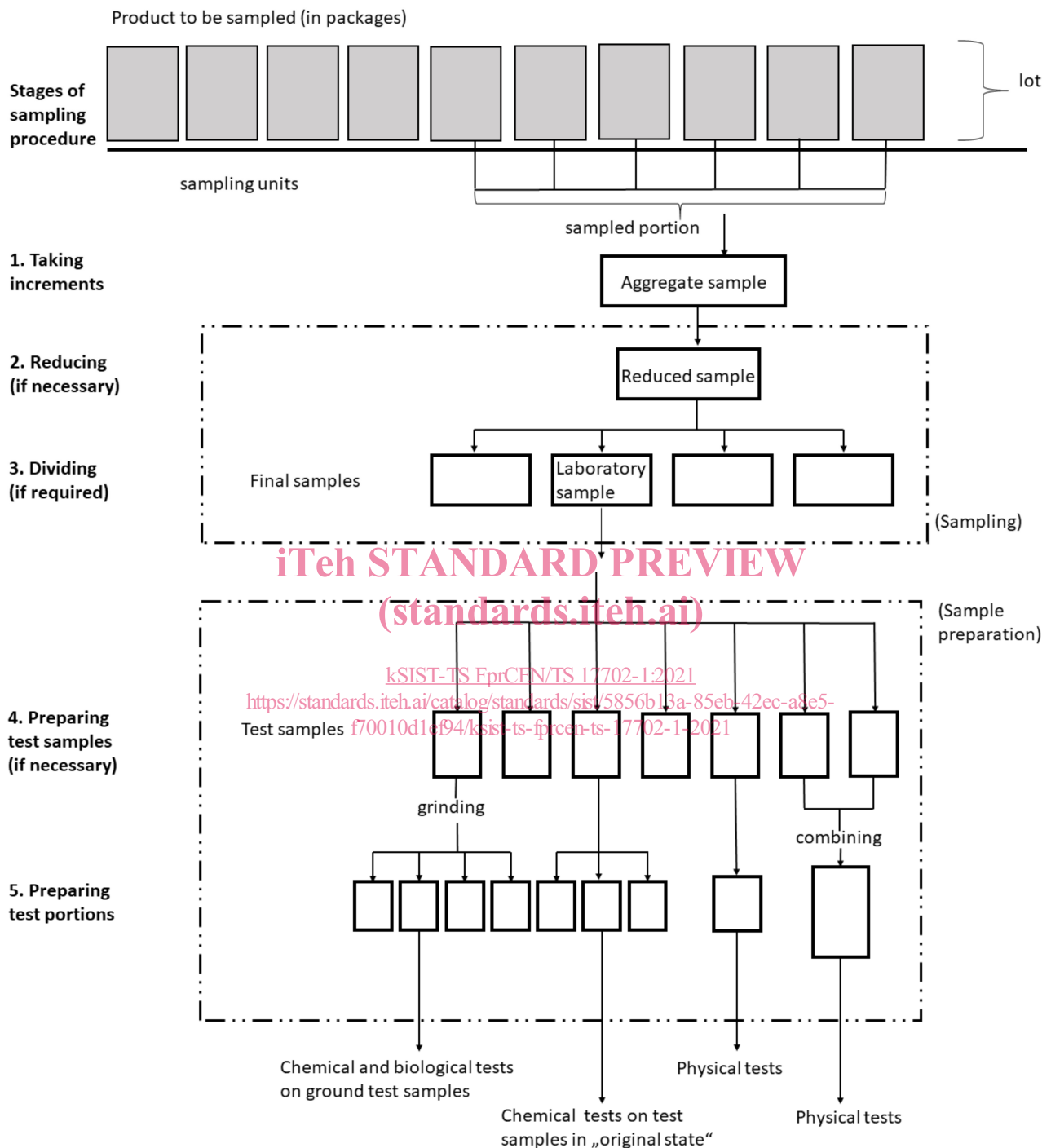


Figure 1 — Schematic diagram of sampling process for solid plant biostimulants

1 Scope

This document specifies sampling plans and methods of representative sampling of plant biostimulants to obtain samples for physical, chemical and biological analysis.

It is applicable to the sampling of lots of plant biostimulants supplied or ready for supply to third parties, as such, or in smaller lots.

It is also applicable to the sampling of blends of fertilizing products where plant biostimulants are main part of the blend. Otherwise, deliverables of sampling relevant for the main part of the blend apply.

This document is intended to be used by manufacturers, buyers and competent authorities to obtain samples prior to transport and supply it to a laboratory for testing.

NOTE This document is applicable to the category of EU fertilizing product (plant biostimulants) in the meaning of the Regulation (EU) 2019/1009.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

3.1

aggregate sample

combination of all increments from the lot

3.2

division

process of producing a number of representative smaller portions, approximately equal in mass to each other, from a larger mass

3.3

final sample

representative part of the reduced sample or, where no intermediate reduction is required, of the aggregate sample

Note 1 to entry: Often, more than one sample is prepared, at the same time, from the reduced sample (or from the aggregate sample). One or more of these final samples will be used as a laboratory sample or as laboratory samples, while others may be stored for reference purposes.

3.4

increment

representative quantity of material taken from a sampling unit

Note 1 to entry: This may be constituted from a number of sub samples.

3.5

laboratory sample

final sample intended for laboratory inspection or testing

3.6

lot

total quantity of material, assumed to have the same characteristics, to be sampled using a sampling plan

FprCEN/TS 17702-1:2021 (E)**3.7****reduced sample**

representative part of the aggregate sample obtained by a process of reduction in such a manner that the mass is at least the mass of the required final samples

3.8**reduction**

process of producing a representative smaller mass of plant biostimulant from a larger mass, with the remainder being discarded

3.9**sampling unit**

defined quantity of material having a boundary (e.g. a container)

3.10**sampled portion**

quantity of a material consisting of all the sampling units from which increments are to be taken and having characteristics presumed to be uniform

4 Sampling plans and quantitative data**4.1 Principle**

The sampling plans given in this document are not based on strict statistical principles, but samples obtained by following the procedures described in this clause shall be considered to be representative of the original lot or sampled portion.

This clause specifies sampling plans for the evaluation of deliveries of plant biostimulants as well as statutory control plans which have to be followed in certain circumstances.

According to available resources, the plant biostimulants are not supplied in other than packaged form (up to 1000 kg / 1 000 l). Therefore this document specifies principles for those cases. Nevertheless, if plant biostimulants were delivered in larger packages and containers or in bulk, the principles of EN 1482-1:2007 should be applied accordingly.

For statutory control and the simple commercial evaluation of a small quantity of plant biostimulant, one final sample is sufficient, but this may subsequently be divided into a number of identical samples.

The number of sampling units from which increments are to be taken depends on the size of the lot.

No incremental samples are taken at microbial plant biostimulants - in order to preserve the sensitive content and maintain its properties intact avoiding possible contamination. Thus, the original package or container itself shall be considered a final sample.

4.2 Sampling plans**4.2.1 Determination of the number of sampling units which form the sampled portion****4.2.1.1 General**

The number of sampling units from which increments are to be taken depends on the size of the lot.

4.2.1.2 Plant biostimulant in packages or containers up to 50 kg or 50 l

The sampling unit is a package or container and the number of individual packages (containers) from which incremental samples are to be taken should be in accordance with Table 1. For packages smaller than 1 kg (1 l) each, it might be necessary to increase the number taken to ensure a sufficiently large aggregate sample.

Table 1 — Number of individual packages (containers) from which incremental samples are to be taken

Lot size	Minimum number of sampling units
4 or fewer packages	All packages
More than 4 up to 10 packages	4 packages
More than 10 up to 400 packages	The nearest whole number above the square root of the number of packs.
More than 400 packages	20

4.2.1.3 Plant biostimulant in packages or containers of more than 50 kg or 50 l and up to 1 000 kg or 1 000 l

Sampling units are mostly larger containers such as Intermediate Bulk Containers (IBC's). The number of sampling units from which incremental samples should be taken depends on the total mass present. The number of sampling units to be sampled should be in accordance with Table 2.

Table 2 — Number of sampling units from which incremental samples are to be taken

Lot size	Minimum number of sampling units
25 t (25 m ³) or less	10
More than 25 t (25 m ³) and up to 400 t (400 m ³)	The nearest whole number above the square root of the number of packs.
More than 400 t (400 m ³)	40

4.2.2 Identification of the sampling units to be sampled

Identify the packages in the lot or sampled portion consecutively and, by using a source of random numbers, select the packages from which incremental samples are to be taken and mark them.

For microbial plant biostimulants - identify the packages in the lot or sampled portion consecutively and, by using a source of random numbers, select five packages which are to be taken as final samples.

4.2.3 Collection of increments

4.2.3.1 General

All incremental samples shall be of approximately the same mass/volume.

FprCEN/TS 17702-1:2021 (E)**4.2.3.2 Solid plant biostimulants**

Collect the relevant number of increment from each of the selected packages (sampling units - 4.2.2), by the use of a divider (5.2 or 5.3), by the use of a spear (5.4) or by the manual method (5.5).

4.2.3.3 Fluid plant biostimulants

Follow the appropriate procedure described in 5.6.

4.3 Quantitative data**4.3.1 Mass of increments**

Increments should normally be of at least 250 g (250 ml) each. For packages of 1 kg (1 l) or smaller, the entire contents are taken as the increment.

4.3.2 Mass of aggregate/reduced samples

Combine and mix all the collected increments. When necessary, reduce the aggregate sample as described in Clause 5, so that the final mass for chemical or biological testing is at least 2 kg (2 l) and for physical testing at least 4 times the maximum amount required for the physical test method.

4.3.3 Mass of final sample

The mass of each final sample for chemical or biological analysis shall be at least 500 g. For physical testing the mass is dependent on the test(s) to be carried out.

5 Incremental sampling methods**5.1 General**

Packages of solid plant biostimulants may be sampled by a process of reduction (see 5.2 and 5.3), starting with the total contents of the package, or by spear sampling (see 5.4.) from the selected packages but the latter only when the product is uniform. The packages (including IBC's) may be sampled by emptying the contents as in the method described in 5.5.

Containers up to 20 l of fluid plant biostimulants may be sampled by a process of pouring into collecting vessel immediately after homogenization. All containers may be sampled by a process of filling of tube, sucking by sampling pump or by sampling at source.

The sampling apparatus shall be clean, dry and inert (i.e. fabricated of materials that will not affect the characteristics of the plant biostimulant to be sampled).

All sampling operations should be carried out in such a way as to minimize changes to sample properties, e.g. moisture content.

5.2 Solid plant biostimulants in packages – Reduction method using a rotary mechanical sample divider**5.2.1 General**

This subclause specifies a method suitable for the reduction of a mass of a solid plant biostimulant to a smaller quantity which forms the incremental sample from the package.

The method may also be used to prepare reduced samples, final samples or laboratory samples.

By choosing suitable equipment, the method is applicable to the reduction of a sample of any mass above a minimum defined by the size and number of particles.