



SLOVENSKI STANDARD
oSIST prEN 17725:2023
01-maj-2023

Rastlinski biostimulanti - Določanje količine (mase ali prostornine)

Plant biostimulants - Determination of the quantity (indicated by mass or volume)

Pflanzen-Biostimulanzien - Bestimmung der Menge (durch Angabe der Masse oder des Volumens)

Biostimulants des végétaux - Détermination de la quantité (indiquée en masse ou en volume)

Ta slovenski standard je istoveten z: prEN 17725

ICS:

65.080 Gnojila Fertilizers

oSIST prEN 17725:2023 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 17725

April 2023

ICS 65.080

Will supersede CEN/TS 17725:2022

English Version

Plant biostimulants - Determination of the quantity (indicated by mass or volume)

Biostimulants des végétaux - Détermination de la
quantité (indiquée en masse ou en volume)

Pflanzen-Biostimulanzien - Bestimmung der Menge
(durch Angabe der Masse oder des Volumens)

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

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.

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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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prEN 17725:2023 (E)

European foreword

This document (prEN 17725:2023) 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 CEN enquiry.

This document will supersede CEN/TS 17725:2022.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

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Introduction

This document specifies the methods to be used for the determination of quantity of plant biostimulants products sold or offered for sale. It is relevant to the quantity declarations given in European Regulation 2019/1009. Wherever possible, quantity determination checks shall be carried out at the premises of the packer/importer/seller.

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 the European Parliament and of the Council of 5 June 2019 laying down rules on the making available on the market of EU fertilising products (“FPR” or “Fertilising Products Regulation”). This standardization request, presented as M/564 and M/564 Amd1, also contributes to the Communication on “Innovating for Sustainable Growth: A Bio economy for Europe”. Working Group 5 “Labelling and denominations” was created to develop a work program as part of this standardization request.

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 commercialization of the European biostimulant industry.

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1 Scope

This document specifies the methods to be used for the determination of quantity of solid and liquid forms of plant biostimulants in packages, containers or in bulk.

This document is not applicable to the quantity determination of: soil improvers, growing media, organic and organo-mineral fertilizers and fertilizing product blends whose main constituent is a growing media or soil improver. The method for quantity determination for these products is given in EN 15761, EN 15238 and EN 12580.

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.

EN 17702-1:—¹, *Plant biostimulants — Sampling and sample preparation — Part 1: Sampling*

EN 17724:—², *Plant biostimulants — Terminology*

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 EN 17724:—² and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

liquid form

suspension or solution, where a suspension is a two-phase dispersion in which solid particles are maintained in suspension in the liquid phase

3.2

solution

liquid that is free of solid particles, or a gel and includes pastes

Note 1 to entry: “Liquids” include products in liquid form and solutions.

Note 2 to entry: The definition is based on Regulation (EU) 2019/1009 [1], Chapter 1, Article 2, (6).

3.3

solid form

form characterized by structural rigidity and resistance to changes of shape or volume and in which atoms are tightly bound to each other, either in a regular geometric lattice (crystalline solids) or in an irregular manner (an amorphous solid)

Note 1 to entry: The definition is based on Regulation (EU) 2019/1009 [1], Chapter 1, Article 2, (7).

¹ Under preparation

² Under preparation

prEN 17725:2023 (E)**3.4****weighing instrument**

instrument serving to determine the mass of a body by using the action of gravity on that body

3.5**non-automatic weighing instrument**

weighing instrument requiring the intervention of an operator during the weighing process to decide that the weighing result is acceptable

3.6**nominal quantity****nominal weight or nominal volume**

mass or volume indicated on the container, i.e. the quantity of product which the container is deemed to contain

3.7**net quantity**

actual mass or volume of the contents which a package contains

3.8**gross quantity**

actual mass of the package plus contents

3.9**bulk material**

material that is not packaged

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3.10**package**

container and its contents

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3.11**container**

closed receptacle directly in contact with a plant biostimulant whereby the plant biostimulant may be transported or stored in unit quantities

EXAMPLE Road tanker, lorry, ship or boat, bag, bottle, tank, barrel.

4 Method of quantity determination**4.1 Quantity declaration**

The quantity in terms of mass or volume of plant biostimulant shall be at least the nominal quantity stated on the container or documentation associated with the product.

NOTE Attention is drawn to the existence of national regulations that specify the unit of measurement (weight or volume) used for the quantity declaration.

4.2 Determination of quantity of product in solid and liquid form when sold by mass

4.2.1 Apparatus

A suitable weighing instrument.

“Suitable” means of a type sufficiently accurate to determine the actual quantity of the product (gross weight) and mass of the packaging used so that a net quantity of the contents can be determined.

“Suitable type” means an instrument that complies with the requirements of EN 45501:2015.

“Sufficiently accurate” means that the scale intervals and sensitivity of the instrument are appropriate to detect the quantity of the product and of the package/wrapping. This will depend on the nominal quantity of plant biostimulant being weighed.

NOTE An indication of appropriate maximum scale interval is given in Annex A.

4.2.2 Equipment checks

Before using the weighing machine to establish the quantity of a plant biostimulant the machine should be checked for accuracy with weights which comply with OIML R111 and having an accuracy tolerance of one third the maximum error for the weighing machine under test. The tests are laid down by EN 45501:2015.

A record should be kept of the results of the tests.

NOTE Because half a graduation can be read on an analogue indicator weighing instrument weight display, digital instruments will need to indicate 50 % of those for an analogue graduation.

4.2.3 Method

4.2.3.1 Packages under 25 kg

Place the package on the weighing plate of the weighing instrument and record the mass shown (x).

Weigh 10 randomly selected empty containers (non-destructive testing) or if empty containers are not available empty 10 randomly selected containers already weighed after ensuring no product remains in or on the containers (destructive testing).

NOTE Because of the small mass of the containers, a more sensitive weighing instrument can be used for this operation see Annex A.

Record the masses and obtain an average mass of the containers (y). Record the calculation and result.

Subtract the mean mass of the container from the gross quantity of each packed fertilizing product and calculate and record each net quantity (z) using Formula (1).

$$z = x - y \quad (1)$$

where

z is the net quantity by mass of the contents of an individual package in g;

x is the gross quantity by mass of an individual package in g;

y is the mean mass of the empty containers in g.

prEN 17725:2023 (E)**4.2.3.2 Packages/containers 25 kg to 1 ton**

These are containers which cannot be manually handled and require larger capacity weighing instruments to ascertain their gross weight.

The weighing machine used shall be suitable for the mass of plant biostimulant in the container. See 4.2.1 and Annex A.

Otherwise, the procedure given in 4.2.3.1 above should be followed with the exception of the number of empty containers to be weighed reduced to 5.

4.2.3.3 Product sold loose and in bulk

This plant biostimulant will need to be loaded into some type of transport (vehicle, large container or other suitable method of containing the product). Using a weighing instrument suitable for the amount in the consignment (see 4.2.1 and Annex A). The transport should be weighed empty and the mass (m_t) recorded. The plant biostimulant shall then be placed in the transport container and the gross quantity (m_g) recorded. The net quantity (m_n) of the plant biostimulant can then be calculated using the Formula (2).

$$m_n = m_g - m_t \quad (2)$$

where

m_n is the net quantity of the plant biostimulant in g;

m_g is the gross quantity of the plant biostimulant and transport container in g;

m_t is the mass of the transport container empty in g.

4.3 Determination of quantity of product in liquid form when sold by volume**4.3.1 Apparatus**

Weighing instrument capable of weighing to the nearest 0,1 g. Sampling equipment according to EN 17702-1:—¹ shall be used. Density kit – 250 ml brim measure and strike, 250 ml density bottle/container or graduated pipette capable of measuring to the nearest 0,1 ml and beaker.

Water bath at (20 ± 1) °C.

Density meter capable of reading to six decimal places.

4.3.2 Equipment check

Check all weighing equipment for accuracy as detailed in 4.2.2.

4.3.3 Determination of density**4.3.3.1 General**

Take a representative sample of the liquid product, after thorough mixing, using a method given in EN 17702-1:—¹. The quantity of the sample shall be at least 250 ml.

Where the container of plant biostimulant is below 250 ml the whole contents of a number of containers can be used to make up the 250 ml sample.

For a density check to be carried out the liquid plant biostimulant shall be brought to and kept at (20 ± 1) °C during the determination process.

The method used for the determination of the density of the plant biostimulant will be determined by the physical nature of the product. Some products contain solid matter in suspension where the SG bottles with fine overflow holes and density meters where the sampling tube is small bore are not suitable to determine density of this type of products. Below are methods using different types of equipment and it is important that the most appropriate method is used.

4.3.3.2 Manual methods

A Class 1 weighing instrument (that complies with the requirements of EN 45501:2015) capable of weighing to 0,1 g should be used for all mass determination in respect of density calculation.

Method 1 - Weigh either a 250 ml brim measure and strike, a 250 ml density bottle/container or a beaker on suitable weighing equipment and record the mass in grams (*a*).

Bring the temperature of the plant biostimulant to $(20 \pm 1) ^\circ\text{C}$ either by use of a heated water bath or a refrigerator.

While continuing to thoroughly mix the sample, fill the brim measure/density bottle/container, using a pipette where necessary for final portion, with 250 ml of the liquid plant biostimulant. Alternatively, use a graduated pipette to measure 250 ml of plant biostimulant into the beaker.

If a brim measure is being used strike across the top of the liquid ensuring no bubbles are present below the strike.

Ensure the outside of the brim measure/density bottle/container or beaker is completely dry.

Weigh the brim measure with strike or density bottle/container or beaker containing the 250 ml of liquid plant biostimulant and record the gross mass (*b*). Deduct the mass of the measure and strike or density bottle, or measuring cylinder or beaker (*b - a*), and record the net mass of the liquid (*c*), calculated by using Formula (3):

$$c = b - a \quad (3)$$

where

- c* is the net mass of the liquid plant biostimulant in g;
- b* is the gross quantity by mass of the 250 ml brim measure and strike plus 250 ml of liquid plant biostimulant, or the 250 ml density bottle plus 250 ml of liquid plant biostimulant, or the beaker containing 250 ml of liquid plant biostimulant, in g;
- a* is the mass of the empty 250 ml brim measure and strike, or empty 250 ml density bottle, or empty beaker, in g.

The density (ρ_{M1}) of the plant biostimulant can be calculated by using Formula (4).

$$\rho_{M1} = \frac{c}{V_p} \quad (4)$$

where

- ρ_{M1} is the density of the liquid plant biostimulant, in g/ml;
- c* is the net quantity by mass of the plant biostimulant, in g;
- V_p is the volume of the liquid plant biostimulant used for density determination, 250 ml.

Method 2 - If the product is a thick liquid this method is appropriate though not as accurate. Weigh a calibrated measuring cylinder graduated in 1 ml divisions. After bringing to $(20 \pm 1) ^\circ\text{C}$ temperature agitate the sample thoroughly and pour 250 ml of product into the cylinder, tap the cylinder on a hard