

English Version

Plant biostimulants - Determination of the anaerobic plate count

Biostimulanzien für die pflanzliche Anwendung -
Bestimmung der anaeroben Keimzahl

This Technical Specification (CEN/TS) was approved by CEN on 3 January 2022 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Principle	7
4.1 General.....	7
4.2 Brief description	7
5 Culture media and reagents	7
6 Equipment and consumables	7
7 Preparation of test sample	8
7.1 General.....	8
7.2 Liquid – water-based formulations.....	8
7.3 Liquid – oil-based (emulsifiable concentrate - EC) formulations.....	8
7.4 Solid – wettable powder (WP) formulations.....	8
7.5 Solid – water dispersible granules (WDG) formulations.....	8
7.6 Solid – pellets, granules, microgranules (slow release) formulations.....	9
7.7 Solid substrates	9
8 Procedure	9
8.1 Test portion, initial suspension and dilutions	9
8.2 Inoculation and incubation	9
8.3 Critical Control Point	9
9 Calculation	9
10 Expression of results	10
11 Performance characteristics of the method	10
11.1 Interlaboratory studies	10
11.2 Sensitivity	10
11.3 Specificity.....	10
12 Test report	10
13 Quality assurance	10
Annex A (informative) Guidelines for calculating and reporting the Anaerobic Plate Counts (ANPC)	11
A.1 General.....	11
A.2 Example.....	11
Annex B (normative) Composition and preparation of culture media and reagents	12
B.1 Anaerobe Agar (ANA)	12
B.1.1 Base	12
B.1.2 Hemin solution	13
B.1.3 Vitamin K1 solution	13

B.1.4 Buffered peptone water 13

Bibliography 14

This document is a preview generated by EVS

European foreword

This document (CEN/TS 17719:2022) has been prepared by Technical Committee CEN/TC 455 “Plant Biostimulants”, the secretariat of which is held by AFNOR.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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

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 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, 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 commercialisation of the European biostimulant industry.

Biostimulants used in agriculture can be applied in multiple ways: on soil, on plants, as seed treatment, etc. A microbial plant biostimulant consists of a microorganism or a consortium of microorganisms, as referred to in Component Material Category 7 of Annex II of the EU Fertilising Products Regulation 2019/1009 [1].

Table 1 summarizes many of the agro-ecological principles and the role played by biostimulants.

Table 1 — Agro-ecological principles and the role played by biostimulants

Increase biodiversity
By improving soil microorganism quality/quantity
Reinforce biological regulation and interactions
By reinforcing plant-microorganism interactions
— symbiotic exchanges i.e. <i>Mycorrhizae</i>
— symbiotic exchanges i.e. <i>Rhizobiaceae/Fava</i>
— secretions mimicking plant hormones (i.e. <i>Trichoderma</i>)
By regulating plant physiological processes
— e.g. growth, metabolism, plant development...
Improve biogeochemical cycles
— improve absorption of nutritional elements
— improve bioavailability of nutritional elements in the soil
— stimulate degradation of organic matter

WARNING — Persons using this document should be familiar with normal laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

IMPORTANT — It is absolutely essential that tests conducted in accordance with this document be carried out by suitably trained staff.

1 Scope

This document provides a horizontal method for enumeration of microorganisms that are able to grow and form colonies in a solid medium after anaerobic incubation at 30 °C.

The method is applicable to microbial plant biostimulants for verifying that the concentration of anaerobes does not exceed the respective limits outlined in the EU Regulation on Fertilising Products [1].

This method does not apply to the microbiological monitoring of the environment in which microbial plant biostimulants are manufactured.

No information about potential human pathogens can be inferred from anaerobic plate counts.

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 17708, *Plant biostimulants - Preparation of sample for microbial analysis*

CEN/TS 17724, *Plant biostimulants - Terminology*

EN ISO 7218:2007,¹ *Microbiology of food and animal feeding stuffs - General requirements and guidance for microbiological examinations (ISO 7218:2007)*

EN ISO 11133:2014,² *Microbiology of food, animal feed and water - Preparation, production, storage and performance testing of culture media (ISO 11133:2014)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CEN/TS 17724 and the following apply.

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

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

3.1

microorganism

any microbiological entity, including lower fungi, bacteria and viruses, cellular or non-cellular, capable of replication or of transferring genetic material

[SOURCE: Regulation (EC) No 1107/2009, Article 3, point 15]

¹ As impacted by EN ISO 7218:2007/A1:2013.

² As impacted by EN ISO 11133:2014/A1:2018 and EN ISO 11133:2014/A2:2020.