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BSI Standards Publication

Plant biostimulants — Determination of chloride

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National foreword

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Biostimulants des végétaux - Dosage des chlorures

Biostimulanzien für die pflanzliche Anwendung - Chloridbestimmung

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European foreword

This document (CEN/TS 17723:2022) has been prepared by Technical Committee CEN/TC 455 “Plant Biostimulants”, the secretariat of which is held by AFNOR.

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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 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 commercialization of the European biostimulant industry.

To improve the market of EU Plant Biostimulants products, they should be labelled in accordance with the labelling requirements set out in Annex III of Regulation 2019/1009 [5], which prescribes that the phrase “poor in chloride” or similar may only be used if the chloride (Cl^-) content is below 30 g/kg of dry matter.

This means that the manufacturer has the possibility to note on the label that the plant biostimulant is “poor in chloride”, only if the manufacturer has done the analysis and the chloride content is well below 30 g/kg of dry matter.

The trend of the last few years is to reduce the use of harmful chemicals both for operators and the environment, favouring the use of the most advanced technologies that have a lower impact; therefore, the potentiometric is preferable to other techniques.

Furthermore, the potentiometric method is not influenced by interferences due to colour or turbidity of the sample solution.

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

IMPORTANT — It is absolutely essential that tests conducted according to this document are carried out by suitably trained staff.

1 Scope

This document specifies a potentiometric method for the determination of chloride (Cl^-) content in the presence or in the absence of organic material. This method is applicable to plant biostimulants.

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 17702-2, *Plant biostimulants - Sampling and sample preparation - Part 2: Sample preparation*

CEN/TS 17724, *Plant biostimulants - Terminology*

EN ISO 3696:1995, *Water for analytical laboratory use - Specification and test methods (ISO 3696:1987)*

3 Terms and definitions

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

3.1
chloride content of plant biostimulants
mass fraction of chlorides, expressed in g/kg of dry matter, determined in accordance with the procedure described in this document

4 Sampling

Sampling is not part of this method specified in this document. A recommended sampling method is given in CEN/TS 17702-1.

Laboratory sample preparation shall be carried out in accordance with CEN/TS 17702-2. Homogeneous samples are recommended.

5 Principle

5.1 General

Soluble chlorides are extracted from the sample with water containing nitric acid. The chloride content of the solution is titrated with silver nitrate standard solution and the end point is determined potentiometrically by using either a silver ion selective electrode plus a reference electrode or a combined electrode.

5.2 Interferences

Maintain the sample at a lower pH can avoid the silver ion interact with OH^- to form silver oxide (Ag_2O) precipitation, minimize other anionic ions interference with the AgCl formation, and improve the binding between the titrant and the analyte.