PD CEN/TS 17703:2022

BSI Standards Publication

# Plant biostimulants — Determination of chromium(VI)

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# National foreword

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The UK participation in its preparation was entrusted to Technical Committee EH/4/-/7, Plant Biostimulants.

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

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# CEN/TS 17703

March 2022

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English Version

# Plant biostimulants - Determination of chromium(VI)

Biostimulants des végétaux - Dosage du chrome(VI)

Biostimulanzien für die pflanzliche Anwendung - Bestimmung von Chrom (VI)

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.

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# European foreword

This document (CEN/TS 17703:2022) 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 5 June 2019 laying down rules on the making available on the market of EU fertilizing 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”. The Working Group 4 “Other safety parameters”, 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.

# 1 Scope

This document was developed to provide a method for verifying that hexavalent chromium (CrVI) is not present in plant biostimulants in a concentration that exceeds the respective limits outlined in the EU Regulation on Fertilising Products [1].

This document is applicable to all types of plant biostimulants (solid and liquid[1)] ) used in agriculture.

The method described is suitable to quantify the chromium(VI) content in plant biostimulants down to 2 mg/kg.

The results obtained from this method are strictly dependent on the extraction conditions. Results obtained by using other extraction procedures (extraction solution, pH, extraction time, etc.) are not comparable with the results produced by the procedure described in this document.

# 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 17701-1, *Plant biostimulants — Determination of specific elements — Part 1: Digestion by aqua regia for subsequent determination of elements*

CEN/TS 17701-2, *Plant biostimulants — Determination of specific elements — Part 2: Determination of total content of Cd, Pb, Ni, As, Cr, Cu and Zn*

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*

CEN/TS 17704, *Plant biostimulants — Determination of dry matter*

# 3 Terms and definitions

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

**3.1**
**chromium(VI) content**
amount of chromium(VI) in plant biostimulant determined after extraction with an aqueous salt solution at pH 7,0 to 8,0

NOTE The chromium(VI) content is reported as chromium(VI) in milligrams per kilogram (mg/kg), expressed as the dry mass of the sample.

[SOURCE: EN ISO 17075-2:2017, definition 3.1]

# 4 Principle

A preliminary determination of the total chromium in aqua regia extracts by ICP-AES (CEN/TS 17701-1 and CEN/TS 17701-2) could reduce the number of the samples where the determination of chromium(VI) is necessary because if the content of aqua regia (total) extractable chromium is lower than the legislative limit for chromium(VI) then the determination of chromium(VI) is not necessary.

Extractable chromium(VI) is leached from the sample in phosphate buffer at pH 7,0 to 8,0. An aliquot of the filtered extract is analysed for Cr(VI) using ion-exchange chromatography with UV-VIS detection.

1) According to the definition of “solid form” and “liquid form” to the current EU legislation when it is published.