



BSI Standards Publication

## Organo-mineral fertilizers — Determination of chelating and complexing agents

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## National foreword

This Published Document is the UK implementation of CEN/TS 17785:2022.

The UK participation in its preparation was entrusted to Technical Committee CII/37, Fertilisers and related chemicals.

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

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TECHNICAL SPECIFICATION  
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**CEN/TS 17785**

April 2022

ICS 65.080

English Version

**Organo-mineral fertilizers - Determination of chelating  
and complexing agents**

Engrais organo-minéraux - Détermination des agents  
chélatants et complexants

Organisch-mineralische Düngemittel - Bestimmung  
von Chelat- und Komplexbildnern

This Technical Specification (CEN/TS) was approved by CEN on 13 March 2022 for provisional application.

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## **European foreword**

This document (CEN/TS 17785:2022) has been prepared by Technical Committee CEN/TC 260 “Fertilizers and liming materials” the secretariat of which is held by DIN.

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.

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## **Introduction**

Regulation (EU) 2019/1009 [1] lays down the rules on the making available on the market of EU fertilizing products and the specific safety and quality requirements for the defined product function categories (PFCs).

Organo-mineral fertilizers have been classified into PFC 1 (B), which has been divided into two groups PFC 1 (B) (I) [solid organo-mineral fertilizers] and PFC (B) (II) [liquid organo-mineral fertilizers].

An organo-mineral fertilizer is a co-formulation of:

- a) one or more inorganic fertilizers, as specified in PFC 1 (C), and;
- b) one or more materials containing: organic carbon (Corg); and nutrients of solely biological origin.

Inorganic Fertilizers have been classified into PFC 1 (C), which has been divided into two groups PFC 1 (C) (I) [inorganic macronutrient fertilizers] and PFC 1 (C) (II) [inorganic micronutrient fertilizers].

Micronutrients are considered to be, in plant nutrition, a number of elements known to be needed in small amounts for proper plant growth and development. The most common are Iron (Fe), Manganese (Mn), Molybdenum (Mo), Copper (Cu), Zinc (Zn) and Boron (B).

If an inorganic micronutrient fertilizer contains a substance, or one of the substances in the mixture, which is intended to enhance the long term availability to plants of micronutrients in the EU fertilizing product, that substance is either a chelating agent or a complexing agent.

The specific safety and quality requirements in relation to the determination of chelating and complexing agents in organo-mineral fertilizers (PFC 1 (B)) are defined in this document as well as normative references of the test methods to be used in order to measure the compliance with the related requirement in the Regulation (EU) 2019/1009 [1].

## 1 Scope

This document specifies references to the methods for the determination of chelating and complexing agents in organo-mineral fertilizers. The document specifies references to the methods and requirements for organo-mineral fertilizers in accordance with PFC 1 (B) as specified in the Regulation (EU) 2019/1009 [1].

Organo-mineral materials for this purpose are organic fertilizers containing micronutrient chelates or complexes and/or mixtures of them, in powder or granular form, aqueous or suspension preparations.

## 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 1482-1:2007, *Fertilizers and liming materials — Sampling and sample preparation — Part 1: Sampling*

EN 1482-2:2007, *Fertilizers and liming materials — Sampling and sample preparation — Part 2: Sample preparation*

EN 12944-1:1999<sup>1</sup>, *Fertilizers and liming materials — Vocabulary — Part 1: General terms*

EN 12944-2:1999<sup>2</sup>, *Fertilizers and liming materials — Vocabulary — Part 2: Terms relating to fertilizers*

CEN/TS 17784-2:2022, *Organo-mineral fertilizers — Identification of complexing agents — Part 2: Method using high-performance liquid chromatography (HPLC)*

CEN/TS 17784-1:2022, *Organo-mineral fertilizers — Identification of complexing agents — Part 1: Method using UV-Vis spectrophotometry and gravimetry*

CEN/TS 17788:2022, *Organo-mineral fertilizers — Determination of the fraction of complexed micronutrients*

CEN/TS 17789-1:2022, *Organo-mineral fertilizers — Identification of chelating agents — Part 1: Determination of EDTA, HEEDTA and DTPA by ion chromatography*

CEN/TS 17789-2:2022, *Organo-mineral fertilizers — Identification of chelating agents — Part 2: Determination of Fe chelated by [o,o] EDDHA, [o,o] EDDHMA and HBED, or the amount of chelating agents by ion pair chromatography*

CEN/TS 17790:2022, *Organo-mineral fertilizers — Determination of the chelated micronutrient content and the chelated fraction of micronutrients by treatment with a cation exchange resin*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12944-1:1999 and EN 12944-2:1999 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>

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<sup>1</sup> As impacted by EN 12944-1:1999/AC:2000.

<sup>2</sup> As impacted by EN 12944-2:1999/AC:2000.