



BSI Standards Publication

**Organo-mineral fertilizers — Determination
of the chelated micronutrient content and
the chelated fraction of micronutrients by
treatment with a cation exchange resin**

National foreword

This Published Document is the UK implementation of CEN/TS 17790:2022.

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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English Version

**Organo-mineral fertilizers - Determination of the chelated
micronutrient content and the chelated fraction of
micronutrients by treatment with a cation exchange resin**

Engrais organo-minéraux - Détermination de la teneur
en oligo-éléments chélatés et de la fraction chélatée
d'oligo-éléments par traitement avec une résine
échangeuse de cations

Organisch-mineralische Düngemittel - Bestimmung des
Gehalts an chelatisierten Spurennährstoffen und des
chelatisierten Anteils an Spurennährstoffen durch
Behandlung mit einem Kationenaustauscherharz

This Technical Specification (CEN/TS) was approved by CEN on 21 February 2022 for provisional application.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Contents		Page
European foreword		3
Introduction		4
1	Scope	5
2	Normative references	5
3	Terms and definitions	5
4	Principle	6
5	Interferences	6
6	Reagents	6
7	Apparatus	8
8	Sampling and sample preparation	8
9	Procedure	8
9.1	Extraction of the sample	8
9.2	pH adjustment	9
9.3	Ion exchange separation	9
9.4	Spectrometric determination	10
9.5	Water soluble micronutrient content determination	10
10	Expression of results	10
10.1	Chelated micronutrient content in the fertilizer	10
10.2	Chelated fraction of a micronutrient in the fertilizer	11
11	Test report	11
Annex A (informative) Complete names of chelating agents		12
Bibliography		13

European foreword

This document (CEN/TS 17790:2022) 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

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 organo-mineral 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 chelating agents are divided into two groups¹:

- Group 1: EDTA, DTPA, HEEDTA, IDHA and [S,S]-EDDS;
- Group 2: Chelating agents present in UVCB (unknown or variable composition, complex reaction products and biological materials) chelates including [o,o] EDDHA, [o,p] EDDHA, [o,o] EDDHMA, HBED and EDDHSA.

This document defines the test method to be used in order to measure the compliance with the chelated fraction of a micronutrient in product function category (PFC) 1(B) (classified according to Regulation (EU) 2019/1009 [9]) for organo-mineral fertilizers containing one or more chelating agents of Group 2.

¹ Abbreviated terms are described in Annex A.

1 Scope

This document specifies a method for the determination of the chelated micronutrient content and the chelated fraction of a micronutrient, in organo-mineral fertilizers, having an organic matrix based on vegetal residues (cocoa shells, grape residue, soybean residue, etc), algae extract, and animal meal (feather, bones, blood, etc) and containing UVCB, EDDHA, EDDHMA, HBED, EDDHSA micronutrients by the treatment with a cation exchange resin.

The limit of determination of the chelated micronutrient content highly depends on the specific electrical conductivity of the sample, on the amount of nutrient present, and varies between 0,005 % in simple matrices with high amounts of micronutrient, and 0,5 % in more complex cases (see 9.1).

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 12944-1, *Fertilizers and liming materials — Vocabulary — Part 1: General terms*

EN 12944-2, *Fertilizers and liming materials — Vocabulary — Part 2: Terms relating to fertilizers*

EN 16962, *Fertilizers — Extraction of water soluble micro-nutrients in fertilizers and removal of organic compounds from fertilizer extracts*

EN 16963, *Fertilizers — Determination of boron, cobalt, copper, iron, manganese, molybdenum and zinc using ICP-AES*

EN 16965, *Fertilizers — Determination of cobalt, copper, iron, manganese and zinc using flame atomic absorption spectrometry (FAAS)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12944-1 and EN 12944-2 and the following apply.

ISO and IEC maintain terminological 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

chelated fraction of a micronutrient

ratio of chelated micronutrient content compared to the total water-soluble micronutrient content

Note 1 to entry: The chelated fraction is expressed as a percentage.