



BSI Standards Publication

# Inorganic micronutrient fertilizers — Determination of the chelated micronutrient content and the chelated fraction of micronutrients

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Part 2: Determination of EDTA, DTPA, EEDTA, IDHA or EDDS

## National foreword

This Published Document is the UK implementation of CEN/TS 17786-2:2022.

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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**CEN/TS 17786-2**

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English Version

**Inorganic micronutrient fertilizers - Determination of the  
 chelated micronutrient content and the chelated fraction  
 of micronutrients - Part 2: Determination of EDTA, DTPA,  
 HEEDTA, IDHA or EDDS**

Engrais inorganiques à base d'oligo-éléments -  
 Détermination de la teneur en oligo-éléments chélatés  
 et de la fraction chélatée des oligo-éléments - Partie 2 :  
 Dosage de l'EDTA, du DTPA, du HEEDTA, de l'IDHA ou  
 de l'EDDS

Anorganische Spurennährstoffdüngemittel -  
 Bestimmung des Gehaltes an chelatisierten  
 Spurennährstoffen und des chelatisierten Anteils an  
 Spurennährstoffen - Teil 2: Bestimmung von EDTA,  
 DTPA, HEEDTA, IDHA oder EDDS

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

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## European foreword

This document (CEN/TS 17786-2:2022) 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 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 chelating agents are divided into two groups<sup>1</sup>:

- 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,p] EDDHMA, HBED and EDDHSA.

This document defines the test method to be used in order to measure the compliance with the chelated fraction of micronutrients in product function category (PFC) 1(C) (U) (classified according to Regulation (EU) 2019/1009 [7]) as inorganic micronutrient fertilizer containing one or more chelating agents of Group 1.

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<sup>1</sup> Abbreviated terms are described in Annex A.

## 1 Scope

This document specifies a method for the determination of the chelated fraction of micronutrients for fertilizers containing one or many micronutrients chelated by EDTA, DTPA, HEEDTA, IDHA or [S,S]-EDDS in fertilizers.

This method is used for inorganic micronutrient fertilizers when micronutrients are chelated only by EDTA, DTPA, HEEDTA, IDHA or [S,S]-EDDS or for mixtures in which EDTA, DTPA, HEEDTA, IDHA or [S,S]-EDDS is one of the chelating agents.

The method is applicable to all inorganic micronutrient fertilizers containing EDTA, DTPA, HEEDTA, IDHA or [S,S]-EDDS as chelating agent for contents > 0,1 % (w/w).

The method is based on ICP or AAS measurement of the concentration of micronutrients according to EN 16963 or EN 16965 after water extraction according to EN 16962 and LC measurement of the chelating agents according to EN 15950, EN 13368-1 and EN 13368-3.

## 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 13368-1, *Fertilizers — Determination of chelating agents in fertilizers by chromatography — Part 1: Determination of EDTA, HEEDTA and DTPA by ion chromatography*

EN 13368-3, *Fertilizers — Determination of chelating agents in fertilizers by chromatography — Part 3: Determination of [S,S]-EDDS by ion pair chromatography*

EN 15950, *Fertilizers — Determination of N-(1,2-dicarboxyethyl)-D,L-aspartic acid (Iminodisuccinic acid, IDHA) using high-performance liquid chromatography (HPLC)*

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/>