TECHNICAL SPECIFICATION

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English Version

Inorganic micronutrient fertilizers - Determination of the chelated micronutrient content and the chelated fraction of micronutrients - Part 1: Treatment with a cation exchange resin

Engrais inorganiques à base d'oligo-éléments - Détermination de la teneur en oligo-éléments chélatés et de la fraction chélatée des oligo-éléments - Partie 1 : Traitement avec une résine échangeuse de cations

Anorganische Spurennährstoffdüngemittel - Bestimmung des Gehaltes an chelatisierten Spurennährstoffen und des chelatisierten Anteils an Spurennährstoffen - Teil 1: Behandlung mit einem Kationenaustauscherharz

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (CEN/TS 17786-1:2022) has been prepared by Technical Committee CEN/TC 260 "Fertilizers and liming materials", the secretariat of which is held by DIN.

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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[1]:

— Group 1: EDTA, DTPA, HEEDTA, IDHA and [S,S]-EDDS; and

— Group 2: Chelating agents present in UVCB (unknown or variable composition, complex reaction products or biological materials) chelates including [o,o] EDDHA, [o,p] EDDHA, [o,o] EDDHMA, HBED and [o,o] EDDHSA.

This document defines the test method to be used in order to measure the compliance with the chelated fraction of iron in product function category (PFC) 1(C) (II)(a) (classified according to Regulation (EU) 2019/1009 [9]) for 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 iron content and the chelated fraction of iron, in UVCB chelates, EDDHA, EDDHMA, HBED, EDDHSA, in inorganic micronutrient fertilizers by the treatment with a cation exchange resin.

The limit of determination of the chelated iron 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 and soil improvers — Vocabulary — Part 1: General terms*

EN 12944-2, *Fertilizers and liming materials and soil improvers — 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 the chelated micronutrient content and the water-soluble micronutrient content

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