PD CEN/TS 17788:2022

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Organo-mineral fertilizers - Determination of the fraction of complexed micronutrients

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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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Organo-mineral fertilizers - Determination of the fraction of complexed micronutrients

Engrais organo-minéraux - Détermination de la fraction d'oligo-éléments complexés

Organisch-mineralische Düngemittel - Bestimmung des Anteils an komplexierten Spurennährstoffen

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Ref. No. CEN/TS 17788:2022 E

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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 5
5 Interferences 6
6 Reagents 6
7 Apparatus 6
8 Sampling and sample preparation 7
9 Procedure 7
9.1 Preparation of the sample solution 7
9.2 Precipitation 7
9.3 Spectrometric determination 8
9.4 Water-soluble micronutrient content determination 8
10 Expression of results 8
10.1 Complexed micronutrient content in the fertilizer 8
10.2 Complexed fraction of a micronutrient in the fertilizer 8
11 Test report 9
Bibliography 10

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European foreword

This document (CEN/TS 17788:2022) 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.

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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 can be either a chelating agent or a complexing agent.

The incorporation of complexing agents in organo-mineral fertilizers is intended to enhance the long term availability to plants of micronutrients in such EU fertilizing products.

WARNING – Users of this document should be familiar with normal laboratory practice. This document does not purport to address all of the safety issues, if any, associated with its use. It is the responsibility of the user to establish appropriate health and safety practices and to ensure compliance with any national regulatory conditions.

IMPORTANT – It is absolutely essential that tests conducted according to this document are carried out by suitably trained staff.

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1 Scope

This document specifies a general method for the determination of the micronutrients complexed by complexing agents in organo-mineral fertilizers. The method allows the determination of the total concentration of each complexed micronutrient in complexes after subtraction of the chelated micro-nutrients content, but it does not identify the individual complexing agents.

This procedure concerns EU organo-mineral fertilizing products which contain complexed micro-nutrients covered by Regulation (EU) 2019/1009 [6]. The method is applicable to a mass fraction of the metal complexed of at least 0,07 %, 0,006 % and 0,035 % of Fe, Mn and Zn respectively (see [7]). A lower limit of quantification has not been established for Cu and Co.

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
complexing agent
organic substance forming a flat or steric structure with one di- or tri-valent transition metal cation (zinc (Zn), copper (Cu), iron (Fe), manganese (Mn) or cobalt (Co))

4 Principle

The method is based on the precipitation of the inorganic forms at pH 9. Then the complexed forms of an element remain in solution and are separated from the non-complexed forms. The complexed forms are collected and their content determined by spectrometry, as well as the soluble element content.

NOTE For additional information see [7] and [8].

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