

STN P	Organicko-minerálne hnojivá Identifikácia chelátotvorných činidiel Časť 2: Stanovenie Fe chelátovaného [o,o] EDDHA, [o,o] EDDHMA a HBED alebo množstva chelátotvorných činidiel ionopárovou chromatografiou	STN P CEN/TS 17789-2 65 5064
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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

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/22

Táto predbežná slovenská technická norma je určená na overenie. Prípadné pripomienky pošlite do apríla 2024 Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

Obsahuje: CEN/TS 17789-2:2022

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English Version

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

Engrais organo-minéraux - Identification des agents chélatants - Partie 2 : Détermination du Fe chélaté par [o,o] EDDHA, [o,o] EDDHMA et HBED, ou de la quantité d'agents chélatants par chromatographie d'appariement d'ions

Organisch-mineralische Düngemittel - Identifizierung von Chelatbildnern - Teil 2: Bestimmung von Fe chelatisiert mit [o,o] EDDHA, [o,o] EDDHMA und HBED oder der Menge der Chelatbildner mittels Ionenpaarchromatographie

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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CEN/TS 17789-2:2022 (E)

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	Preparation of the sample solution for iron chelates	8
9.2	Preparation of the sample solution for other micronutrient chelates	9
9.3	Preparation of the calibration solutions	9
9.4	Chromatographic analysis	9
10	Expression of results	13
10.1	Fe in Fe-chelates	13
10.2	Chelating agent in organo-mineral fertilizers	14
11	Test report	15
Annex A (informative) Complete names of chelating agents		16
Annex B (informative) General procedure for the determination of the titrimetric purity of the chelating agents using a photometric automatic titrator		17
Bibliography		18

European foreword

This document (CEN/TS 17789-2:2022) 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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CEN/TS 17789-2:2022 (E)**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 or 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 identify and determine the content of UVCB micronutrient chelated by [o,o] EDDHA, [o,o] EDDHMA and HBED in organo-mineral fertilizers (product function category (PFC) 1(B) according to Regulation (EU) 2019/1009 [4]).

¹ Abbreviated terms are described in Annex A.

1 Scope

This document specifies a method for the determination by ion pair chromatography of the iron chelated by each individual *ortho*(hydroxy)-*ortho*(hydroxy) isomer of the chelating agents [o,o] EDDHA, [o,o] EDDHMA and by HBED in organo-mineral fertilizers, having an organic matrix based on vegetal residues (cocoa shells, grape residue, soybean residue, ...), algae extract, and animal meal (feather, bones, blood, ...) and containing one or more of these substances, except for [o,o] EDDHMA and HBED mixes.

The method allows the identification and the determination of the total concentration of water soluble iron chelates of these chelating agents. Also, after derivatization with Fe, the soluble amount of the chelating agents can be determined when other micronutrients beside Fe are present in organo-mineral fertilizers containing [o,o] EDDHA, [o,o] EDDHMA or HBED.

This method is applicable to a mass fraction of the metal chelated of at least 0,625 %.

NOTE 1 The substances EDDHA and EDDHMA exist as several different isomeric forms. Positional isomers for the hydroxyl or methyl groups (in *ortho*, *meta*, and *para* positions) as well as stereo isomers (*meso* and dl-racemic forms) are known. Both *meso* and dl-racemic forms of the [*ortho,ortho*] EDDHA and [*ortho,ortho*]. Since *para*, *meta* and *ortho* methyl positional isomers of the EDDHMA present quite similar stability, they could be grouped: in the method here described the *para*, *meta* and *ortho* methyl positional isomers of the [o,o] EDDHMA are considered together. HBED (N,N'-bis(2-hydroxybenzyl)-ethylenediamine-N,N'-diacetic acid) does not present isomeric forms.

NOTE 2 At present, analytically pure standards only exist for [*ortho,ortho*] EDDHA, [*ortho,ortho*] EDDHMA and HBED. All other substances being unavailable as a standard, the influence of their eventual presence in the samples (with respect to the sensitivity and the selectivity of this method) has not been studied.

NOTE 3 The *meso* and the dl-racemic forms of [o,o] EDDHA and [o,o] EDDHMA can be determined separately by this method.

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*

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