

Fertilizers - Treatment with a cation exchange resin for the determination of the chelated micro-nutrient content and of the chelated fraction of micro-nutrients

Fertilizers - Treatment with a cation exchange resin for the determination of the chelated micro-nutrient content and of the chelated fraction of micro-nutrients

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13366:2001 sisaldab Euroopa standardi EN 13366:2001 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.06.2001 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13366:2001 consists of the English text of the European standard EN 13366:2001.</p> <p>This document is endorsed on 18.06.2001 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p>Käsitlusala:</p> <p>This standard defines a method for the treatment with a cation exchange resin for the determination of the chelated micro-nutrient content and chelated fraction of the micro-nutrients (trace elements) cobalt, copper, iron, manganese, and zinc in fertilizers.</p>	<p>Scope:</p> <p>This standard defines a method for the treatment with a cation exchange resin for the determination of the chelated micro-nutrient content and chelated fraction of the micro-nutrients (trace elements) cobalt, copper, iron, manganese, and zinc in fertilizers.</p>
--	--

ICS 65.080

Võtmesõnad: cation exchange, cation exchangers, chelating agents, chelation, cobalt, copper, determination, determination procedures, fertilizers, iron, manganese, nutrient, soil improving materials, solids, zinc, testing, trace elements

English version

Fertilizers

Treatment with a cation exchange resin for the determination of the
chelated micro-nutrient content and of the chelated fraction
of micro-nutrients

Engrais – Traitement avec une résine
échangeuse d'ions cationique pour
la détermination de la teneur en
oligo-éléments chélatés et de la
fraction chélatée des oligo-éléments

Düngemittel – Behandlung mit einem
Kationenaustauscherharz zur
Bestimmung des chelatisierten
Spurennährstoffgehaltes und des
chelatgebundenen Anteils von
Spurennährstoffen

This European Standard was approved by CEN on 2001-01-01.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Management Centre: rue de Stassart 36, B-1050 Brussels

Content

Foreword	2
1 Scope	3
2 Normative references	3
3 Terms and definitions	3
4 Principle	3
5 Interferences	3
6 Apparatus	4
7 Reagents	4
8 Procedure	6
9 Expression of results	7
10 Precision	8
11 Test report	8
Bibliography	9

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 260 "Fertilizers and liming materials", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2001, and conflicting national standards shall be withdrawn at the latest by July 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard defines a method for the treatment with a cation exchange resin for the determination of the chelated micro-nutrient content and the chelated fraction of the micro-nutrients (trace elements) cobalt, copper, iron, manganese, and zinc in fertilizers.

This method applies to fertilizers containing one or more of the micro-nutrients cobalt, copper, iron, manganese, and zinc, chelated by one or more chelating agents of the group of the polyamino polycarboxylic acids, previously determined according to EN 13368-1 and EN 13368-2, either alone or in combination with primary (N, P, K) and/or secondary (S, Na, Ca, Mg) nutrients.

The limit of determination of the chelated micro-nutrient content varies between 0,005 % in simple matrices with high amounts of chelated micro-nutrients, and 0,5 % in more complex cases (see 7.2).

2 Normative references

This European standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 1482, *Sampling of solid fertilizers and liming materials*.

EN 13368-1, *Fertilizers – Determination of chelating agents in fertilizers by ion chromatography – Part 1 : EDTA, HEDTA and DTPA*.

EN 13368-2, *Fertilizers – Determination of chelation agents in fertilizers by ion chromatography – Part 2 : EDDHA and EDDHMA*.

EN ISO 3696, *Water for analytical laboratory use – Specification and test methods (ISO 3696 : 1987)*.

3 Terms and definitions

For the purposes of this European Standard, the following term and definition apply:

3.1

chelated fraction

the chelated content of a micro-nutrient, divided by its total content, and expressed as a percentage

4 Principle

The sample is extracted with water and the extract adjusted to a neutral pH. The chelated forms of an element thus having a negative and/or neutral charge are not retained by an ion exchange resin of the strong sulfonated cationic type, and are separated from the non chelated forms, having a cationic nature. The chelated forms are collected and their content determined by spectrometry, as well as the total element content.

5 Interferences

Any substance combining with a micro-nutrient to form a stable, negative or uncharged compound (chelate or complex) at neutral pH, will prevent the retention by the resin, and account for a certain degree of chelation. This is the case for many complexing agents, e.g. amino acids, citrate, and for chelating agents other than ethylenediaminetetraacetic acid (EDTA), hydroxyethylethylenediaminetetraacetic acid (HEDTA), diethylenetriaminepentaacetic acid (DTPA), ethylenediamine-di-(o-hydroxyphenyl)acetic acid (EDDHA) and ethylenediamine-di-(o-hydroxy-p-methylphenyl)acetic acid (EDDHMA).