

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13368-1:2014 sisaldab Euroopa standardi EN 13368-1:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 13368-1:2014 consists of the English text of the European standard EN 13368-1:2014.
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English Version

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

Engrais - Détermination des agents chélatants dans les engrais par chromatographie - Partie 1: Détermination du EDTA, HEEDTA et DTPA par chromatographie ionique

Düngemittel - Bestimmung von Chelatbildnern in Düngemitteln mit Chromatographie - Teil 1: Bestimmung von EDTA, HEEDTA und DTPA mit Ionenchromatographie

This European Standard was approved by CEN on 16 November 2013.

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Foreword

This document (EN 13368-1:2014) 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of an identical text or by endorsement, at the latest by July 2014, and conflicting national standards shall be withdrawn at the latest by July 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13368-1:2001.

The following modifications have been made:

- a) the title of the European Standard revised;
- b) referenced European Standards on vocabulary added to Clause 2;
- c) Clause 3 Terms and definitions added;
- d) the sampling method is not part of the standard, informative reference to EN 1482-1 added;
- e) Annex A: complete names of chelating agents technical revised;
- f) Bibliography revised;
- g) editorially revised.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies a method for the chromatographic determination of the total amount of each of the individual chelating agents EDTA, HEEDTA, and DTPA in fertilizers containing one or more of these substances. The method allows the identification and the determination of the total water soluble fraction of each of these chelating agents. It does not allow to distinguish between the free form and the metal bound form of the chelating agents.

NOTE EDTA, HEEDTA and DTPA are abbreviations used in this European Standard for the sake of simplicity. For complete names see Annex A.

This method applies to fertilizers containing chelates of one or more of the following micro-nutrients: cobalt, copper, iron, manganese, zinc and with a mass fraction of at least 0,1 %.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1482-2, *Fertilizers and liming materials - Sampling and sample preparation - Part 2: Sample preparation*

EN 12944-1:1999, *Fertilizers and liming materials and soil improvers - Vocabulary - Part 1: General terms*

EN 12944-2:1999, *Fertilizers and liming materials and soil improvers - Vocabulary - Part 2: Terms relating to fertilizers*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12944-1:1999 and EN 12944-2:1999 apply.

4 Principle

The micro-nutrients associated with the chelating agents present in an aqueous extract of the sample are replaced by iron(III). The iron chelates are separated and determined by ion chromatography. The separation is based on anion exchange, by elution with a nitrate acetate solution. The detection is based on UV photometry at 330 nm, after post-column reaction with diluted perchloric acid.

5 Interferences

Several substances can interfere, to a degree largely dependent on the type of column used. With the column described in 7.2, the following phenomena have been observed.

- a) Injection of solutions having high concentrations of salts can cause shifts in the retention times, mostly decreasing the retention when compared to the standard solutions. In these cases, the identity of the peaks can be confirmed by standard addition.