

Fertilizers - Determination of complexing agents in
fertilizers - Identification of heptagluconic acid by
chromatography

EESTI STANDARDI EESSÕNA

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English Version

**Fertilizers - Determination of complexing agents in
fertilizers - Identification of heptagluconic acid by
chromatography**

Engrais - Détermination des agents complexants dans
les engrais - Identification de l'acide heptagluconique
par chromatographie

Düngemittel - Bestimmung von Komplexbildnern in
Düngemitteln - Identifikation von Heptaglukonsäure
mit Chromatographie

This European Standard was approved by CEN on 17 November 2015.

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 16847:2016) 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of an identical text or by endorsement, at the latest by July 2016, and conflicting national standards shall be withdrawn at the latest by July 2016.

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1 Scope

This European Standard specifies a chromatographic method which allows the identification of heptagluconic acid (HGA) in fertilizers containing heptagluconic acid metal complexes.

This method is applicable to EC fertilizers containing complexed micro-nutrients, which are covered by Regulation (EC) No 2003/2003 [1].

NOTE For the complete names of the chelating agents mentioned in this document, see Annex E.

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 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 method is based on demetalation with phosphoric acid of the micronutrient HGA complex present in an aqueous solution of the sample.

The complexing agent is then identified and determined by high-performance liquid chromatography.

The separation is carried out on an NH_2 phase bonded to silica column and an aqueous solution of phosphoric acid and acetonitrile as eluent.

The detection is based on UV photometry at 210 nm.

5 Interferences

- a) High concentrations of phosphate in the sample solution can create a large peak preventing the identification/determination of HGA.
- b) High concentrations of chloride, sulfate and nitrate do not interfere in the identification/determination of the complexing agent.
- c) The presence of the chelates of EDDHSA, [o,o]EDDHA, [o,o]EDDHMA, EDTA, DTPA, CDTA, HEEDTA, IDHA as well as the corresponding chelating agents do not interfere since they are separated from HGA.

These substances can be detected in the chromatogram by the appearance of a peak at larger retention times. Therefore, the presence of these kinds of substances shall be taken into account when successive injections are scheduled.