

**Fertilizers - Determination of trace elements -
Determination of arsenic by inductively coupled plasma-
atomic emission spectrometry (ICP-AES) after aqua
regia dissolution**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 16317:2013 sisaldab Euroopa standardi EN 16317:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 16317:2013 consists of the English text of the European standard EN 16317:2013.
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English Version

Fertilizers - Determination of trace elements - Determination of arsenic by inductively coupled plasma-atomic emission spectrometry (ICP-AES) after aqua regia dissolution

Engrais - Dosage des éléments traces - Détermination de l'arsenic par spectrométrie d'émission atomique avec plasma induit par haute fréquence (ICP-AES) après digestion à l'eau régale

Düngemittel - Bestimmung von Elementspuren - Bestimmung von Arsen mit Atomemissionsspektrometrie mit induktiv gekoppeltem Plasma (ICP-AES) nach Königswasseraufschluss

This European Standard was approved by CEN on 29 August 2013.

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Contents

Page

Foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions	4
4 Principle.....	4
5 Sampling and sample preparation	4
6 Reagents.....	4
7 Apparatus	5
8 Procedure.....	6
8.1 General	6
8.2 Preparation of the test solution.....	6
8.2.1 General	6
8.2.2 Preparation.....	6
8.3 Preparation of the test solution for the correction of matrix effects by spike recovery	7
8.4 Preparation of the blank test solution.....	7
8.5 Preparation of the calibration solutions for the analysis of arsenic.....	8
8.6 Determination of arsenic by ICP-AES	8
8.6.1 General	8
8.6.2 Determination by ICP-AES.....	8
9 Calculation and expression of the results	9
9.1 External calibration.....	9
9.2 Correction for spike recovery.....	9
9.3 Standard addition method	10
9.4 Calculation of the element content in the sample	11
10 Precision.....	11
10.1 Inter laboratory tests.....	11
10.2 Repeatability.....	11
10.3 Reproducibility.....	11
11 Test report	12
Annex A (informative) Results of the inter-laboratory test.....	13
A.1 Inter-laboratory tests	13
A.2 Statistical results for the determination of arsenic by ICP-AES	13
Bibliography.....	14

Foreword

This document (EN 16317:2013) 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 April 2014, and conflicting national standards shall be withdrawn at the latest by April 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 CEN/TS 16317:2012.

The following changes have been made to the former edition:

- a) the CEN Technical Specification has been adopted as a European Standard;
- b) the document has been editorially revised.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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 determination of the content of arsenic in fertilizers using inductively coupled plasma-atomic emission spectrometry (ICP-AES) after aqua regia dissolution. Limits of quantification are dependent on the sample matrix as well as on the instrument, but can roughly be expected to be 1,5 mg/kg for As.

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

Arsenic is extracted from the sample with aqua regia and conventional boiling. The concentration in the extract is measured by inductively coupled plasma-atomic emission spectrometry (ICP-AES) with axial or radial viewing.

5 Sampling and sample preparation

Sampling is not part of the methods specified in this European Standard. A recommended sampling method is given in EN 1482-1.

Sample preparation shall be carried out in accordance with EN 1482-2.

6 Reagents

Use only reagents of recognised analytical grade.

Commercially available stock solutions shall be replaced according to the specifications from the supplier or after one year if prepared in the laboratory from available salts. Standard solutions shall be renewed monthly as a general rule.

6.1 Water, according to EN ISO 3696, grade 2.

6.2 Hydrochloric acid, $c(\text{HCl}) = 12 \text{ mol/l}$; 37 % volume fraction; $\rho \approx 1,18 \text{ g/ml}$.

6.3 Nitric acid, $c(\text{HNO}_3) = 16 \text{ mol/l}$; not less than 65 % volume fraction, $\rho \approx 1,42 \text{ g/ml}$.