

Animal feeding stuffs - Determination of calcium, sodium, phosphorus, magnesium, potassium, sulphur, iron, zinc, copper, manganese and cobalt after pressure digestion by ICP-AES

EESTI STANDARDI EESSÕNA

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English Version

**Animal feeding stuffs - Determination of calcium, sodium,
phosphorus, magnesium, potassium, sulphur, iron, zinc, copper,
manganese and cobalt after pressure digestion by ICP-AES**

Aliments pour animaux - Dosage du calcium, du sodium,
du phosphore, du magnésium, du potassium, du soufre, du
fer, du zinc, du cuivre, du manganèse et du cobalt après
digestion sous pression par ICP-AES

Futtermittel - Bestimmung von Calcium, Natrium,
Phosphor, Magnesium, Kalium, Schwefel, Eisen, Zink,
Kupfer, Mangan und Kobalt nach Druckaufschluss mittels
ICP-AES

This European Standard was approved by CEN on 30 December 2011.

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Foreword

This document (EN 15621:2012) has been prepared by Technical Committee CEN/TC 327 “Animal feeding stuffs”, the secretariat of which is held by NEN.

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of an identical text or by endorsement, at the latest by August 2012, and conflicting national standards shall be withdrawn at the latest by August 2012.

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.

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1 Scope

This European Standard specifies a method for the determination of the minerals calcium, sodium, phosphorus, magnesium, potassium and sulphur and the elements iron, zinc, copper, manganese, cobalt in animal feeding stuffs by inductively coupled plasma atomic emission spectrometry (ICP-AES) after pressure digestion.

The method was fully statistically tested and evaluated within 11 animal feeding stuff samples for the minerals calcium, sodium, phosphorus, magnesium, potassium and sulphur and the elements iron, zinc, copper, manganese and cobalt.

For potassium and sulphur the HORRAT values were mostly higher than 2. Therefore, for these elements the method is more applicable as a screening method and not for confirmatory purposes.

Other elements like molybdenum, lead, cadmium, arsenic were not fully statistically tested and evaluated within 11 animal feeding stuff samples because these elements did not occur in concentrations higher than the limit of quantification in most of these samples. A single laboratory validation is therefore necessary for the use of this multi element method for these elements.

The method limit of quantification for each element is dependent on the sample matrix as well as on the instrument. The method is not applicable for determination of low concentrations of elements. A limit of quantification of 1 mg/kg should normally be obtained.

NOTE This method can also be used for the determination of minerals in products with high mineral content (> 5 %), yet for this purpose other more precise analytical techniques are available.

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

prEN ISO 6498, *Animal feeding stuffs — Guidelines for sample preparation* (ISO/DIS 6498)

3 Principle

For the determination of calcium, sodium, phosphorus, magnesium, potassium and sulphur, iron, zinc, copper, manganese, cobalt, molybdenum, lead, cadmium and arsenic a test portion of the sample is digested under pressure.

The concentration of the elements is determined by inductively coupled plasma atomic emission spectrometry (ICP-AES) using external calibration or standard addition technique.

WARNING — The use of this European Standard can involve hazardous materials, operations and equipment. This standard does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this European Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

4 Reagents

Use only reagents of recognized analytical grade, and water conforming to grade 2 of EN ISO 3696.