

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

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

Aliments pour animaux : Méthodes d'échantillonnage
et d'analyse - 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 - Probenahme- und
Untersuchungsverfahren - 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 6 February 2017.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 15621:2017) has been prepared by Technical Committee CEN/TC 327 “Animal feeding stuffs: Methods of sampling and analysis”, 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of an identical text or by endorsement, at the latest by February 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.

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

This document supersedes EN 15621:2012.

WARNING — The method described in this standard implies the use of reagents that pose a hazard to health. The standard does not claim to address all associated safety problems. It is the responsibility of the user of this standard to take appropriate measures for the health and safety protection of the personnel prior to use of the standard and to ensure that regulatory and legal requirements are complied with.

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1 Scope

This European Standard specifies a method for the determination of the elements calcium, sodium, phosphorus, magnesium, potassium, sulphur, iron, zinc, copper, manganese and 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 for the elements calcium, sodium, phosphorus, magnesium, potassium, sulphur, iron, zinc, copper, manganese and cobalt within the following 11 animal feeds: 2 complete feeds (pig feed, sheep feed), 3 complementary feeds (3 mineral feeds), 1 mineral premixture, 3 feed materials (MgO, phosphate, CaCO_3) and 2 feed additives (CuSO_4 , bentonite).

For elements with a HORRAT values higher than 2 (e.g. potassium and sulphur, see Annex A), 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.

For the determination of extractable lead in minerals and feeds, containing phyllosilicates (e.g. kaolinite clay) wet digestion with nitric acid should be used.

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 1 This method can also be used for the determination of minerals in products with high mineral content (>5 %). For this purpose the accuracy of the method has to be checked individually. Other more matrix-specific analytical techniques are also available.

NOTE 2 Results using this European Standard EN 15621 may be higher than those obtained when applying EN 15510 as pressure digestion is used in EN 15621.

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)*

EN ISO 6498, *Animal feeding stuffs - Guidelines for sample preparation (ISO 6498)*

3 Terms and definitions

For the purposes of this document the terms and definitions given in the European legislation apply.

4 Principle

For the determination of calcium, sodium, phosphorus, magnesium, potassium, 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.