

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

EESTI STANDARDI EESSÕNA

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English Version

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

Aliments des animaux - Méthodes d'échantillonnage et
d'analyse - Détermination des teneurs en calcium,
sodium, phosphore, magnésium, potassium, fer, zinc,
cuivre, manganèse, cobalt, molybdène et plomb par
ICP-AES

Futtermittel - Probenahme- und
Untersuchungsverfahren - Bestimmung von Calcium,
Natrium, Phosphor, Magnesium, Kalium, Eisen, Zink,
Kupfer, Mangan, Cobalt, Molybdän und Blei mittels ICP-
AES

This European Standard was approved by CEN on 6 February 2017.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 15510:2017) 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of an identical text or by endorsement, at the latest by February 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.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 15510:2007.

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 the inductively coupled plasma atomic emission spectroscopy (ICP-AES) method for the determination of the elements calcium, sodium, phosphorus, magnesium, potassium, iron, zinc, copper, manganese, cobalt, molybdenum and lead.

The elements calcium, sodium, phosphorus, magnesium, potassium, iron, zinc, copper, manganese, cobalt, molybdenum and lead are extracted either in feeds mainly consisting of organic matter after dry ashing and dissolving in hydrochloric acid or in feeds mainly consisting of inorganic matter after wet digestion with hydrochloric acid.

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

The method was successfully tested for:

- calcium, sodium, phosphorus, magnesium, potassium, iron, zinc, copper, manganese, cobalt and molybdenum in the following animal feeding stuffs: 2 complete feeds (pig feed, sheep feed), 1 feed material (phosphate), 1 mineral premixture and 2 complementary feeds (2 mineral feeds),
- lead in 2 feed materials (phosphate, CaCO_3), 2 feed additives (Bentonite, CuSO_4), 1 complementary feed (mineral feed)

For elements with a HORRAT value higher than 2 (see Annex A) the method is more applicable as a screening method and not for confirmatory purposes.

The method detection limit for each element is dependent on the sample matrix and the instrument. The method is not applicable for the determination of a low concentration of elements. The limit of quantification should be 3 mg/kg or lower.

This method also applies for the determination in products with high element content (>5 %). For this purpose the accuracy of the method has to be checked individually.

NOTE 1 Results using EN 15550 may be lower than those obtained when applying EN 15621 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 following terms and definitions apply:

3.1

limit of detection (LOD)

smallest measured content from which it is possible to deduce the presence of the analyte with reasonable statistical certainty

Note 1 to entry: The limit of detection is numerically equal to three times the standard deviation of the mean of blank determinations ($n \geq 10$, where n = number of measures) performed under reproducibility conditions.