

Animal feeding stuffs: Methods of sampling and analysis - Determination of the radionuclides Iodine-131, Caesium-134 and Caesium-137 in feed

## EESTI STANDARDI EESSÕNA

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English Version

## Animal feeding stuffs: Methods of sampling and analysis - Determination of the radionuclides Iodine-131, Caesium- 134 and Caesium-137 in feed

Aliments des animaux : Méthodes d'échantillonnage et  
d'analyse - Détermination des radionucléides iode 131,  
césium 134 et césium 137 dans les matières premières  
et aliments composés pour animaux

Futtermittel: Probenahme- und  
Untersuchungsverfahren - Bestimmung der  
Radionuklide Jod-131, Cäsium-134 und Cäsium-137 in  
Futtermittel

This European Standard was approved by CEN on 22 February 2021.

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## European foreword

This document (EN 17462:2021) 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of an identical text or by endorsement, at the latest by October 2021, and conflicting national standards shall be withdrawn at the latest by October 2021.

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.

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## Introduction

This document describes a method for  $^{131}\text{I}$ ,  $^{134}\text{Cs}$  and  $^{137}\text{Cs}$  massic activity determination (Bq/kg) in animal feeding stuffs. It was initiated by Directorate General for Health and Food Safety (DG SANTE) of the European Commission following the accident in the Fukushima Daiichi nuclear power plant in March 2011. The event highlighted the need for standardized measurements of the three most common radioactive contaminants following such type of nuclear accident.

The most commonly used method for identification and quantification of these radionuclides in animal feeding stuffs samples is high-resolution gamma-ray spectrometry. As this is a secondary measurement method based on analysis of photopeaks of the emitted gamma rays, care should be taken to use appropriate energy and efficiency calibrations for the detector and test portion used. This method of massic activity determination is described in the present document.

## 1 Scope

This document describes a method for determination of the massic activity (Bq/kg) of  $^{131}\text{I}$ ,  $^{134}\text{Cs}$  and  $^{137}\text{Cs}$  in animal feeding stuffs in monitoring laboratories.

General guidance on the preparation of feed samples and the measurement of the three radionuclides  $^{131}\text{I}$ ,  $^{134}\text{Cs}$  and  $^{137}\text{Cs}$  by high resolution gamma-ray spectrometry is provided. The current document aims to be complementary to existing standards. More information on sample preparation, moisture content determination and gamma-ray spectrometry can be found in specific standards referred to in this document. For example, generic advice on the equipment selection, detectors and quality assurance for gamma-ray spectrometry can be found in ISO 20042 [4].

The method was fully statistically tested and evaluated in a collaborative trial comprising five animal feeding stuff samples for the radionuclides  $^{131}\text{I}$ ,  $^{134}\text{Cs}$  and  $^{137}\text{Cs}$ . Details on the successfully tested working range for each of the examined radionuclides are described in Annex C.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 662, *Animal and vegetable fats and oils — Determination of moisture and volatile matter content (ISO 662)*

EN ISO 665, *Oilseeds — Determination of moisture and volatile matter content (ISO 665)*

EN ISO 712, *Cereals and cereal products — Determination of moisture content — Reference method (ISO 712)*

EN ISO 6497, *Animal feeding stuffs — Sampling (ISO 6497)*

EN ISO 6540, *Maize — Determination of moisture content (on milled grains and on whole grains) (ISO 6540)*

EN ISO 11929-1:2019, *Determination of the characteristic limits (decision threshold, detection limit and limits of the coverage interval) for measurements of ionizing radiation — Fundamentals and application — Part 1: Elementary applications (ISO 11929-1)*

ISO 771, *Oilseed residues — Determination of moisture and volatile matter content*

ISO 6496, *Animal feeding stuffs — Determination of moisture and other volatile matter content*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 6497 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>