



BSI Standards Publication

**Animal feeding stuffs: Methods of sampling and analysis - Performance criteria for single laboratory validated and ring-trial validated methods of analysis for the determination of heavy metals**

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## National foreword

This Published Document is the UK implementation of CEN/TS 17174:2018.

The UK participation in its preparation was entrusted to Technical Committee AW/10, Animal feeding stuffs.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

**Animal feeding stuffs: Methods of sampling and analysis -  
 Performance criteria for single laboratory validated and  
 ring-trial validated methods of analysis for the  
 determination of heavy metals**

Aliments des animaux : Méthodes d'échantillonnage et  
 d'analyse - Critères de performance pour les méthodes  
 d'analyse validées par un ou plusieurs laboratoires  
 pour le dosage des métaux lourds

Futtermittel: Probenahme- und  
 Untersuchungsverfahren - Leistungskriterien für  
 laborintern validierte und Ringversuch validierte  
 Analysemethoden zur Bestimmung von  
 Schwermetallen

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## European foreword

This document (CEN/TS 17174:2018) 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.

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## Introduction

The working group, CEN/TC 327 “Animal feeding stuffs - Methods of sampling and analysis” WG 4 “Elements and their chemical species” selects and elaborates methods of analysis of elements and their chemical species in feedstuffs.

There are many methods of analysis for the determination of elements in feedstuffs, which have been validated and published. It is often required to make a choice between several established methods applicable to the same measurand (analyte/matrix combination).

The Working Group was mandated by the European Commission [1] to establish specific criteria to guide the analyst in the selection between several methods of analysis. As a general rule, analysts should give preference to methods of analysis which comply with the provisions given in Clauses 1 and 2 of Annex III to the Regulation (EU) 2017/625 [2], in the Directive 2002/32/EC [3], with the Commission Regulation (EC) No 152/2009 [4], or with the General Principles for Methods of Analysis of the Codex Alimentarius Commission (CAC), as defined in the CAC Procedural Manual [5] and further developed in the “criteria approach” to the methods of analysis developed by the Codex Committee of Methods of Analysis and Sampling (CCMAS) [6].

The performance criteria laid down in this document are based on published guidance documents (such as the AOAC guidelines [7]; the IUPAC Harmonized Protocol [8] and the SANCO document [9]) or data collected from official reports on European collaborative studies (e.g. EN 15510 [10] or EN 15621 [11]). When such performance characteristics are not available, the criteria were established based on the experience and opinions of the CEN/TC 327/WG 4.

The criteria included in this document have also been used as guidance in the Working Group for the selection of specific methods of analysis of trace elements to be further standardized, for the evaluation of on-going collaborative trials and for the review of previously published standards of analytical methods.

**NOTE** All the criteria provided in this document refer to concentrations (mass fractions) greater than or equal to 0,1 mg/kg, related to the lowest maximum level (ML) set for mercury in feed.

## 1 Scope

This document specifies performance criteria for the selection of single-laboratory validated or collaborative-trial validated methods of analysis of elements and their chemical species in feed. The terms and definition of the relevant parameters for method validation are included. The performance requirements and characteristics are provided. This document may serve as a guide:

- to assess the quality of new European Standard methods under validation;
- to review the quality of previous collaborative trials;
- to confirm the extension of the scope of an already published European Standard applied to other analyte concentrations or matrices; or
- to evaluate the fitness-for-purpose of single-validated methods.

The performance criteria can apply to methods dedicated to the determination of heavy metals, trace elements, major elements and minerals.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **accuracy**

closeness of agreement between a test result and the accepted reference value

[SOURCE: ISO 5725-1, see [12]]

Note 1 to entry: The term accuracy, when applied to a set of test results, involves a combination of random components and a common systematic error or bias component.

Note 2 to entry: It is assessed by determining trueness and precision.

[SOURCE: 2002/657/EC, see [13]]

### 3.2

#### **applicability**

scope of the analytical method; description of the analytes, matrices, and concentration ranges (mass fractions) for which a method of analysis may be used satisfactorily to determine compliance with a given standard (i.e. CEN, ISO, CODEX)

Note to entry: In addition to a statement of the range of capability of satisfactory performance for each factor, the statement of applicability (scope) also includes warnings as to known interference by other analytes, or inapplicability to certain matrices and situations.

### 3.3

#### **bias**

difference between the expectation of the test results ( $x$ ) and an accepted reference value ( $x_{\text{ref}}$ )

[SOURCE: ISO 5725-1, see [12]]