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**Animal feeding stuffs, cereals and  
milled cereal products — Guidelines  
for the application of near infrared  
spectrometry**

*Aliments des animaux, céréales et produits de mouture des céréales —  
Lignes directrices pour l'application de la spectrométrie dans le  
proche infrarouge*



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ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Principle</b> .....	<b>2</b>
<b>5 Apparatus</b> .....	<b>2</b>
<b>6 Calibration and initial validation</b> .....	<b>2</b>
6.1 General.....	2
6.2 Reference methods.....	3
6.3 Outliers.....	3
6.4 Validation of calibration models.....	3
6.4.1 General.....	3
6.4.2 Bias correction.....	4
6.4.3 Slope adjustment.....	4
6.4.4 Expansion of calibration set.....	4
6.5 Changes in measuring and instrument conditions.....	4
<b>7 Statistics for performance measurement</b> .....	<b>5</b>
7.1 General.....	5
7.2 Plot the results.....	5
7.3 Bias.....	6
7.4 Root mean square error of prediction ( $s_{RMSEP}$ ).....	8
7.5 Standard error of prediction ( $s_{SEP}$ ).....	8
7.6 Slope.....	10
<b>8 Sampling</b> .....	<b>12</b>
<b>9 Procedure</b> .....	<b>12</b>
9.1 Preparation of test sample.....	12
9.2 Measurement.....	12
9.3 Evaluation of result.....	12
<b>10 Checking instrument stability</b> .....	<b>13</b>
10.1 Control sample.....	13
10.2 Instrument diagnostics.....	13
10.3 Instruments in a network.....	13
<b>11 Running performance check of calibration</b> .....	<b>13</b>
11.1 General.....	13
11.2 Control charts using the difference between reference and NIR results.....	14
<b>12 Precision and accuracy</b> .....	<b>15</b>
12.1 Repeatability.....	15
12.2 Reproducibility.....	15
12.3 Accuracy.....	15
12.4 Uncertainty.....	15
<b>13 Test report</b> .....	<b>15</b>
<b>Annex A (informative) Guidelines for specific NIR standards</b> .....	<b>16</b>
<b>Annex B (informative) Examples of outliers and control charts</b> .....	<b>17</b>
<b>Annex C (informative) Supplementary terms and definitions</b> .....	<b>23</b>
<b>Bibliography</b> .....	<b>28</b>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 10, *Animal feeding stuffs*.

This second edition cancels and replaces the first edition (ISO 12099:2010), which has been technically revised.

## Introduction

This document has been drafted using, as a basis, ISO 21543 | IDF 201, which was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 5, *Milk and milk products*, and the International Dairy Federation (IDF).



# Animal feeding stuffs, cereals and milled cereal products — Guidelines for the application of near infrared spectrometry

## 1 Scope

This document gives guidelines for the determination by near infrared spectroscopy of constituents such as moisture, fat, protein, starch and crude fibre and parameters such as digestibility in animal feeding stuffs, cereals and milled cereal products.

The determinations are based on spectrometric measurement in the near infrared spectral region.

## 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.

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

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

### 3.1

#### near infrared instrument

##### NIR instrument

apparatus which, when used under the conditions defined in this document, predicts *constituent contents* (3.3) and *technological parameters* (3.4) in *animal feeding stuffs* (3.2), cereals and milled cereal products through relationships to absorptions in the near infrared range

### 3.2

#### animal feeding stuffs

substance or product, including additives, whether processed, partially processed or unprocessed, intended to be used for oral feeding to animals

EXAMPLE Raw materials, fodder, meat and bone meal, mixed feed and other end products, pet food, etc.

### 3.3

#### constituent content

mass fraction of substances determined using the appropriate, standardized or validated chemical method

Note 1 to entry: The mass fraction is often expressed as a percentage.

Note 2 to entry: For examples of appropriate methods, see References [1] to [12].

EXAMPLE Moisture, fat, protein, crude fibre, neutral detergent fibre and acid detergent fibre.