

Solid biofuels - Determination of major elements - Al, Ca, Fe, Mg, P, K, Si, Na and Ti (ISO 16967:2015)

## EESTI STANDARDI EESSÕNA

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English Version

Solid biofuels - Determination of major elements - Al, Ca, Fe,  
Mg, P, K, Si, Na and Ti (ISO 16967:2015)

Biocombustibles solides - Détermination des éléments  
majeurs - Al, Ca, Fe, Mg, P, K, Si, Na et Ti (ISO  
16967:2015)

Biogene Festbrennstoffe - Bestimmung von  
Hauptelementen - Al, Ca, Fe, Mg, P, K, Si, Na und Ti (ISO  
16967:2015)

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

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## Foreword

This document (EN ISO 16967:2015) has been prepared by Technical Committee ISO/TC 238 "Solid biofuels" in collaboration with Technical Committee CEN/TC 335 "Solid biofuels" the secretariat of which is held by SIS.

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of an identical text or by endorsement, at the latest by October 2015, and conflicting national standards shall be withdrawn at the latest by October 2015.

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

This document supersedes EN 15290:2011.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### Endorsement notice

The text of ISO 16967:2015 has been approved by CEN as EN ISO 16967:2015 without any modification.

# 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 Symbols and abbreviated terms</b>	<b>2</b>
4.1 Symbols	2
4.2 Abbreviated terms	2
<b>5 Principle</b>	<b>3</b>
<b>6 Reagents</b>	<b>3</b>
<b>7 Apparatus</b>	<b>3</b>
<b>8 Preparation of the test sample</b>	<b>4</b>
<b>9 Procedure</b>	<b>4</b>
9.1 Digestion	4
9.2 Detection methods	6
9.3 Calibration of the apparatus	6
9.4 Analysis of digests	6
9.5 Blank test	6
<b>10 Calculations</b>	<b>7</b>
<b>11 Performance characteristics</b>	<b>7</b>
<b>12 Test report</b>	<b>7</b>
<b>Annex A (informative) List of conversion factors</b>	<b>9</b>
<b>Annex B (informative) Performance data</b>	<b>10</b>
<b>Bibliography</b>	<b>13</b>

## Introduction

The elements described as major elements of solid biofuels are in fact major elements of the fuel ashes more than of the fuels. The determination of these elements can be used to assess ash behaviour in a thermal conversion process or to assess utilization of ashes. Moreover, fuel contamination or process additives are indicated by high values of certain elements. Contamination of fuel with sand or soil is indicated by high values of several elements.

In this International Standard, wet chemical methods are described.

# Solid biofuels — Determination of major elements — Al, Ca, Fe, Mg, P, K, Si, Na and Ti

## 1 Scope

This International Standard describes methods for the determination of major elements of solid biofuels respectively of their ashes, which are Al, Ca, Fe, Mg, P, K, Si, Na, Ti. The determination of other elements such as barium (Ba) and manganese (Mn) is also possible with the methods described in this International Standard.

This International Standard includes two parts: Part A describes the direct determination on the fuel, this method is also applicable for sulfur and minor elements, Part B gives a method of determination on a prepared 550 °C ash.

## 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.

ISO 7980, *Water quality — Determination of calcium and magnesium — Atomic absorption spectrometric method*

ISO 9964-1, *Water quality — Determination of sodium and potassium — Part 1: Determination of sodium by atomic absorption spectrometry*

ISO 9964-2, *Water quality — Determination of sodium and potassium — Part 2: Determination of potassium by atomic absorption spectrometry*

ISO 9964-3, *Water quality — Determination of sodium and potassium — Part 3: Determination of sodium and potassium by flame emission spectrometry*

ISO 11885, *Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES)*

EN 14780<sup>1)</sup>, *Solid Biofuels — Sample preparation*

ISO 16559, *Solid biofuels — Terminology, definitions and descriptions*

ISO 16993, *Solid biofuels — Conversion of analytical results from one basis to another*

ISO 17294-2, *Water quality — Application of inductively coupled plasma mass spectrometry (ICP-MS) — Part 2: Determination of 62 elements*

ISO 18122<sup>2)</sup>, *Solid biofuels — Determination of ash content*

ISO 18134-3<sup>2)</sup>, *Solid biofuels — Determination of moisture content — Oven dry method — Part 3: Moisture in general analysis sample*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 16559 and the following apply.

1) To be replaced by ISO 14780.

2) To be published.