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Solid biofuels — Determination of the water soluble chloride, sodium and potassium content

Biocombustibles solides — Détermination de la teneur en chlorure, sodium et potassium solubles dans l'eau

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Foreword

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 238, *Solid biofuels*.

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Introduction

The elements chlorine, sodium and potassium are present in solid biofuels. They can contribute significantly to utilization problems such as corrosion, fouling and slagging in furnaces. Also, they affect the gaseous emissions from the thermal processes.

The chlorine content in solid biofuels is mainly present as water soluble inorganic salts such as sodium and potassium chlorides or other ion-exchangeable forms. Determination of the water soluble chloride content is thus an alternative and simple method to achieve information of the level of chlorine in solid biofuels. However, the content of water soluble chloride is not to be mistaken for the total content of chlorine in the fuels.

In solid biofuels sodium and potassium can be present as both minerals and salts. The salts of these elements are extractable with water and are readily volatile during thermal conversion. By determination of the water soluble content of sodium and potassium, an estimate of the aggressive content of the elements in relation to potential slagging and fouling problems can be achieved. For some biofuels, such as straw, experience has shown that the water soluble content of sodium and potassium corresponds to the total content of the elements. The content of water soluble sodium and potassium is not to be mistaken for the total content of the elements.

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Solid biofuels — Determination of the water soluble chloride, sodium and potassium content

1 Scope

This International Standard describes a method for the determination of the water soluble chloride, sodium and potassium content in solid biofuels by extraction with water in a closed container and their subsequent quantification by different analytical techniques.

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 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 10304-1, *Water quality — Determination of dissolved anions by liquid chromatography of ions — Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate*

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

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

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

ISO 18134-3, *Solid biofuels — Determination of moisture content — Oven dry method — Part 3: Moisture in general analysis simple*

EN 14780, *Solid biofuels —Sample preparation*

Std. Meth. 4500-Cl- D Standard Methods For the Examination Of Water and Wastewater, 18th Edition 1992. 4500-Cl- D. Potentiometric Method

3 Terms and definitions

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

3.1
water soluble chloride, sodium and potassium content
amount of the element which can be extracted with water using the extraction procedure specified in this International Standard

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