International Standard

ISO 19743

Solid biofuels — Determination of content of heavy extraneous materials larger than 3,15 mm

Biocombustibles solides — Détermination de la teneur en matériaux lourds exogènes de dimension supérieure à 3,15 mm

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Contents

Page

Foreword

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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 document 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).

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This document was prepared by Technical Committee ISO/TC 238, *Solid biofuels and pyrogenic biocarbon,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 335, *Solid Biofuels and Pyrogenic Biocarbon,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 19743:2017), which has been technically revised.

The main changes are as follows:

— introduction has been extended with a specification of where heavy extraneous materials can enter the fuel. It has also been elucidated that HEM most often are found in wood hogfuel;

— procedure has been updated and clarified;

— calculation has been updated.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Determination of the content of heavy extraneous materials (HEM) larger than 3,15 mm is important when evaluating the suitability of using biomass as biofuel. The presences of heavy extraneous materials lowers the energetic value of the fuel and increases the residue after burning, thus increasing the costs of disposal.

Stones and other impurities contained in biomass from stumps, roots, mill residue and harvest and landscape management residues can cause problems during size reduction, as well as during combustion.

Impurities smaller than 3,15 mm are not considered as part of this testing method but can still contribute to the ash content.

The contents of heavy extraneous materials larger than 3,15 mm are not part of the ash content.

NOTE There are three main sources of heavy extraneous materials:

— they can be contained in the base material from which the biofuel (e.g. hog fuel) is produced;

— they can unintentionally be added to the fuel while loading from the ground, by digging too low;

— they can be residues from former loads in the transport vehicle.

The last two categories of heavy extraneous materials mentioned in the NOTE cannot be determined by the method described in this document, because it is unlikely that the incidental impurities can be found in the random sample on which this method is based. If such incidental impurities are found during visual inspection of the delivered fuel, then this can be documented by pictures and contact can be sought with the supplier to make sure that these incidents are avoided in the future.

Solid biofuels — Determination of content of heavy extraneous materials larger than 3,15 mm

1 Scope

This document specifies a method for the determination of the content of heavy extraneous materials (HEM) larger than 3,15 mm by the use of sink-and-float separation combined with elutriation. This document is applicable to woody biomass in accordance with ISO 17225-1, and especially for hogfuel in accordance with ISO 17225-9.

NOTE 1 This method is designed to determine the level of impurities larger than 3,15 mm with a specific density >1 g/cm^3, such as stones, glass, rubber, metal and certain types of plastics.

NOTE 2 During the processing of the sample, hand sorting of light impurities with a specific density ≤1 g/cm^3 (e.g. plastic foil) can also be done.

NOTE 3 Some heavy extraneous materials (e.g. lumps of clay) can fall apart when submerged in water.

NOTE 4 Heavy extraneous materials smaller than 3,15 mm can damage milling equipment, when reducing the material in size to produce laboratory samples.

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 edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3310-2, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate*

ISO 14780, *Solid biofuels — Sample preparation*

ISO 16559, *Solid biofuels — Vocabulary*

ISO 18134-1, *Solid biofuels — Determination of moisture content — Part 1: Reference method*

ISO 18134-2, *Solid biofuels — Determination of moisture content — Part 2: Simplified method*

ISO 18135, *Solid Biofuels — Sampling*

ISO 21945, *Solid biofuels — Simplified sampling method for small scale applications*

3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
sedimentation
tendency for particles in suspension to settle out of the fluid in which they are entrained due to gravity and come to rest against a barrier