
Trdna biogoriva - Določanje porazdelitve velikosti delcev za nekomprimirana goriva - 1. del: Metoda z nihajočim sitom z odprtinami 3,15 mm ali več (ISO/DIS 17827-1:2022)

Solid biofuels - Determination of particle size distribution for uncompressed fuels - Part 1: Oscillating screen method using sieves with apertures of 3,15 mm and above (ISO/DIS 17827-1:2022)

Biogene Festbrennstoffe - Bestimmung der Partikelgrößenverteilung für unkomprimierte Brennstoffe - Teil 1: Horizontales Rüttelsiebverfahren mit Sieben mit einer Lochgröße von 3,15 mm und darüber (ISO/DIS 17827-1:2022)

Biocombustibles solides - Détermination de la distribution granulométrique des combustibles non comprimés - Partie 1: Méthode au tamis oscillant d'ouverture de maille égale ou supérieure à 3,15 mm (ISO/DIS 17827-1:2022)

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Solid biofuels — Determination of particle size distribution for uncompressed fuels —

Part 1:

Oscillating screen method using sieves with apertures of 3,15 mm and above

*Biocombustibles solides — Détermination de la distribution granulométrique des combustibles non comprimés —**Partie 1: Méthode au tamis oscillant d'ouverture de maille égale ou supérieure à 3,15 mm*

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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).

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).

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

For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee 238, *Solid biofuels*.

This second edition cancels and replaces the first edition (ISO 17827-1:2016), which has been technically revised. The main changes are as follows:

- a) The 8-mm-sieve was removed from the set of sieves.
- b) The table of results was completely modified.
- c) The calculation of median value (Annex) was deleted.
- d) Precision requirements were deleted.
- e) References were updated.
- f) An introduction was added.
- g) Redundant explanations were deleted.
- h) Editorial changes were made.

A list of all parts in the ISO 17827 series can be found on the ISO website.

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

Particle size and size distribution of uncompressed solid biofuels significantly influence the transport, handling and combustion properties of solid fuels. Depending on the type of fuel feeding and the type and size of a conversion plant, fuels of different particle sizes are suitable. Of particular interest are also the fines fraction and oversized particles. An increased content of fine particles can lead to clogging in feed systems and unsteady combustion. Oversized particles can block conveying systems or cause bridging problems in silos and can reduce the bulk density of the fuel. Very fine particles can have negative health effects and are relevant for explosion protection reasons (< 0,5 mm).

ISO 17827, describing the determination of particle size distribution, consists of the following parts under the general title Solid biofuels - Determination of particle size distribution for uncompressed fuels:

Part 1: Oscillating screen method using sieves with apertures of 3,15 mm and above

Part 2: Vibrating screen method using sieves with apertures of 3,15 mm and below

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Solid biofuels — Determination of particle size distribution for uncompressed fuels —

Part 1:

Oscillating screen method using sieves with apertures of 3,15 mm and above

1 Scope

This part of ISO 17827 specifies a method for the determination of the size distribution of particulate biofuels by the horizontally oscillating screen method. It applies to particulate uncompressed fuels with a nominal top size of 3,15 mm and above, e.g. wood chips, hog fuel, olive stones, etc. The method is intended to characterize material up to a particle size class of P63. For larger P-classes and PL-classes, the characterization is mainly done by hand sorting.

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 16559, *Solid biofuels — Vocabulary*

ISO 17225-1, *Solid biofuels — Fuel specifications and classes — Part 1: General requirements*

ISO 17225-4, *Solid biofuels — Fuel specifications and classes — Part 4: Graded wood chips*

ISO 17225-9, *Solid biofuels — Fuel specifications and classes — Part 9: Graded hog fuel and wood chips for industrial use*

ISO 17827-2, *Solid biofuels — Determination of particle size distribution for uncompressed fuels — Part 2: Vibrating screen method using sieves with apertures of 3,15 mm and below*

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

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

ISO 18135, *Solid Biofuels — Sampling*

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

ISO 14780, *Solid biofuels — Sample preparation*

3 Terms and definitions

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

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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
sieve fraction
mass fraction of test portion or sub-portion collected on a sieve after particle separation through the sieving process.

4 Principle

A test portion is subjected to sieving through horizontally oscillating sieves, sorting the particles in decreasing size classes by mechanical means.

5 Apparatus

5.1 Sieves

An appropriate number of sieves with a minimum effective sieve area of 1 200 cm² (e.g. 400 mm diameter) is required for the test.

The sieves shall have round perforated holes in metal plate in accordance with ISO 3310-2. The frame of the sieves shall have a height that will enable the sieves to contain the sample and allows a free movement of the sample during the sieving process.

The number of sieves and the aperture sizes of the sieves shall be chosen in accordance with the size specification for the actual test sample material. For test samples, which shall be assessed according to the requirements in ISO 17225-1, ISO 17225-4 and ISO 17225-9, the following set of sieve aperture sizes is needed: 3,15 mm; 16 mm; 31,5 mm; 45 mm; 63 mm. For further size classification of the fraction passing through the 3,15 mm sieve, see ISO 17827-2.

5.2 Collecting pan

A collecting pan of adequate size is required for collection of material passing through the sieves.

5.3 Weighing containers

The weighing of the sieved particle fractions can be performed either by weighing the remaining material directly on the tared weighed sieves or by collecting and weighing the material in weighing containers.

5.4 Mechanical sieving equipment

The sieving operation shall be horizontally oscillating (two-dimensional) using an appropriate stroke-frequency depending on the type of material being analyzed. Some sieving machines have adjustable parameters. The results of the sieving may differ depending on how adjustable parameters are controlled. It is therefore important for comparative purposes to report how the adjustable parameters are set in terms of frequency, amplitude, duration, etc. If machines have adjustable dimensionless settings, an estimate of the adjustable degree shall be recorded to the best of the ability of the operator.

For a principle drawing of the sieving operation, see [Figure 1](#).

NOTE 1 Be aware that oscillating at too low of a frequency can lead to incomplete particle segregation. The minimum frequency can be determined by conducting pre-tests.