

Solid biofuels - Determination of water sorption and its effect on durability of thermally treated biomass fuels - Part 1: Pellets (ISO 23343-1:2021)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 23343-1:2021 sisaldab Euroopa standardi EN ISO 23343-1:2021 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 23343-1:2021 consists of the English text of the European standard EN ISO 23343-1:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.05.2021.	Date of Availability of the European standard is 19.05.2021.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 27.190, 75.160.40

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele. Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

EUROPEAN STANDARD

EN ISO 23343-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2021

ICS 27.190; 75.160.40

English Version

Solid biofuels - Determination of water sorption and its effect on durability of thermally treated biomass fuels - Part 1: Pellets (ISO 23343-1:2021)

Biocombustibles solides - Détermination de la sorption d'eau et de son influence sur la durabilité des combustibles de biomasse traités thermiquement - Partie 1: Granulés (ISO 23343-1:2021)

Biogene Festbrennstoffe - Bestimmung der Sorption und deren Auswirkung auf die Dauerhaftigkeit von thermisch behandelten Brennstoffen aus Biomasse - Teil 1: Pellets (ISO 23343-1:2021)

This European Standard was approved by CEN on 1 May 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 23343-1:2021) 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 November 2021, and conflicting national standards shall be withdrawn at the latest by November 2021.

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

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 23343-1:2021 has been approved by CEN as EN ISO 23343-1:2021 without any modification.

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Apparatus	2
6 Sampling and test sample preparation	3
7 Procedure	3
7.1 Testing the as-received moisture content and durability.....	3
7.2 Sieving procedure.....	3
7.3 Wetting of the sub-samples.....	4
7.4 Determination of moisture content and durability of the post-immersion sub-samples.....	4
8 Calculations	5
9 Performance characteristics	5
10 Test report	5
Annex A (informative) Performance data	7
Bibliography	9

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 ISO/TC 238, *Solid biofuels*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 335, *Solid biofuels*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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

Thermally treated biomass fuels, particularly in compressed form, are increasingly considered as a replacement of fossil coal or for co-firing in large energy plants for production of heat and/or power. Compressed biomass fuels which are not thermally treated easily absorb moisture; this compromises the durability and generates fines. Thermally treated biomass fuels vary in their affinity to absorb moisture (absorption and/or adsorption – here collectively called sorption) depending on the extent and/or type of thermal treatment, feedstock used to make the product, compression, potential additives used, etc. For this purpose, it is important to understand the degree to which thermally treated compressed solid biofuels are resistant to moisture uptake and the degree to which they maintain durability when exposed to moisture, primarily in the form of rain during outdoor storage.

Thermally treated biomass fuel such as pellets or briquettes may be classified based on these characteristics as suitable or unsuitable to be handled and stored under conditions with limited or no weather protection. This document was developed specifically for the classification of pellets and is not intended to be applicable to other forms of densified fuel (e.g. briquettes). It is intended that other parts will be developed as necessary to apply these principles to other forms of thermally treated biomass fuels.

It should be noted that in large-scale storage of thermally treated biomass fuels the degree of wetting will likely vary within the storage. Therefore, this document is not intended to be used to draw conclusions on the average degree of wetting for any particular storage, but rather provides an indication of the degree to which durability and/or moisture content can be affected under worst case conditions. This method can be used for comparative purposes towards other pelletized thermally treated biomass fuels.

Solid biofuels — Determination of water sorption and its effect on durability of thermally treated biomass fuels —

Part 1: Pellets

1 Scope

This document specifies a method for the determination of water sorption in a laboratory setting and provides a measure for how the durability is impacted as a result of immersion in water. Post-immersion durability reduction is calculated as the difference between the durability of the as-received sample and the durability of the wetted product.

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 — Terminology, definitions and descriptions*

ISO 17831-1, *Solid biofuels — Determination of mechanical durability of pellets and briquettes — Part 1: Pellets*

ISO 18134-1, *Solid biofuels — Determination of moisture content — Oven dry method — Part 1: Total moisture — 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 18846, *Solid biofuels — Determination of fines content in quantities of pellets*

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 terminological databases for use in standardization at the following addresses:

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