SLOVENSKI STANDARD
SIST EN ISO 17225-1:2021

01-september-2021

Nadomešča:
SIST EN ISO 17225-1:2014

Trdna biogoriva - Specifikacije goriv in razredi - 1. del: Splošne zahteve (ISO 17225 -1:2021)

Solid biofuels - Fuel specifications and classes - Part 1: General requirements (ISO 17225-1:2021)

Biogene Festbrennstoffe - Brennstoffspezifikationen und -klassen - Teil 1: Allgemeine Anforderungen (ISO 17225-1:2021)

Biocombustibles solides - Classes et spécifications des combustibles - Partie 1: Exigences générales (ISO 17225-1:2021)

Ta slovenski standard je istoveten z: **EN ISO 17225-1:2021**

ICS:

75.160.40	Biogoriva	Biofuels

SIST EN ISO 17225-1:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 17225-1

June 2021

ICS 27.190; 75.160.40

Supersedes EN ISO 17225-1:2014

English Version

Solid biofuels - Fuel specifications and classes - Part 1: General requirements (ISO 17225-1:2021)

Biocombustibles solides - Classes et spécifications des combustibles - Partie 1: Exigences générales (ISO 17225-1:2021)

Biogene Festbrennstoffe - Brennstoffspezifikationen und -klassen - Teil 1: Allgemeine Anforderungen (ISO 17225-1:2021)

This European Standard was approved by CEN on 2 March 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

Contents

Page

European foreword

This document (EN ISO 17225-1:2021) 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 December 2021, and conflicting national standards shall be withdrawn at the latest by December 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.

This document supersedes EN ISO 17225-1:2014.

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 17225-1:2021 has been approved by CEN as EN ISO 17225-1:2021 without any modification.

INTERNATIONAL STANDARD

ISO 17225-1

Second edition
2021-06

Solid biofuels — Fuel specifications and classes —

Part 1: General requirements

Biocombustibles solides — Classes et spécifications des combustibles —

Partie 1: Exigences générales

Reference number
ISO 17225-1:2021(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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.

This second edition cancels and replaces the first edition ISO 17225-1:2014, which has been technically revised. The main changes compared to the previous edition are as follows:

— particle size distribution for wood chips and hog fuel updated

— Table 15 for undensified thermally treated biomass deleted

A list of all parts in the ISO 17225 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

The objective of the ISO 17225 series is to provide unambiguous and clear classification principles for solid biofuels and to serve as a tool to enable efficient trading of biofuels and to enable good understanding between seller and buyer as well as a tool for communication with equipment manufacturers. It will also facilitate authority permission procedures and reporting.

The ISO 17225 series is made for all stakeholders.

Solid biomass covers organic, non-fossil material of biological origin which may be used as fuel for heat and electrical generation.

Figure 1 describes the bioenergy utilization chain from sources of biomass, to biofuel production to final use of bioenergy. Although biomass can be used for energy generation it has many other primary uses (non-fuels) as a raw material for construction, furniture, packaging, paper products, etc.

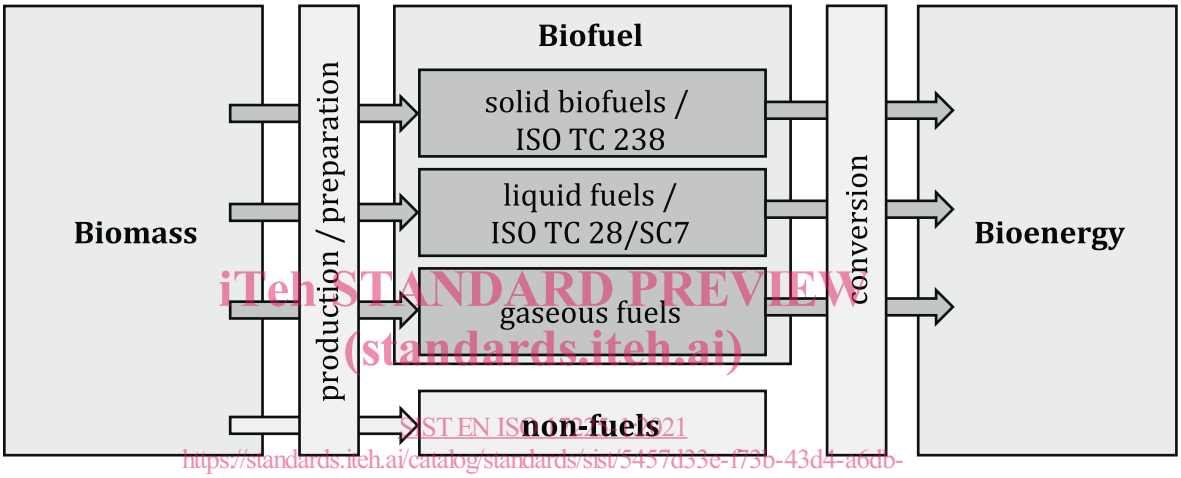

Figure 1 — ISO TC 238 within the biomass — Biofuel — Bioenergy field

The classifications given in this document are provided with the objective of using biomass as a solid biofuel and therefore do not deal with all other uses.

Although the product standards starting from Part 2 of the ISO 17225 series may be obtained separately, they require a general understanding of the standards based on and supporting ISO 17225-1. It is recommended to obtain and use ISO 17225-1 in conjunction with these standards.

In the product standards, graded means that solid biofuel is used either in commercial applications, such as in households and small commercial and public sector buildings or industrial applications, which demand the use of fuels with specified quality (properties) expressed by quality classes like A1, A2 or B.

Solid biofuels — Fuel specifications and classes —

Part 1: General requirements

1 Scope

This document determines the fuel quality classes and specifications for solid biofuels of raw and processed materials originating from

a) forestry and arboriculture;

b) agriculture and horticulture;

c) aquaculture.

Chemically treated material may not include halogenated organic compounds or heavy metals at levels higher than those in typical virgin material values (see Annex B) or higher than typical values of the country of origin.

NOTE Raw and processed material includes woody, herbaceous, fruit, aquatic biomass and biodegradable waste originating from above sectors.

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 14780, *Solid biofuels — Sample preparation*

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

ISO 16948, *Solid biofuels — Determination of total content of carbon, hydrogen and nitrogen*

ISO 16967, *Solid biofuels — Determination of major elements — Al, Ca, Fe, Mg, P, K, Si, Na and Ti*

ISO 16968, *Solid biofuels — Determination of minor elements*

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

ISO 16994, *Solid biofuels — Determination of total content of sulfur and chlorine*

ISO 17827-1, *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 17827-2, *Solid biofuels — Determination of particle size distribution for uncompressed fuels — Part 2: Vibrating screen method using sieves with aperture of 3,15 mm and below*

ISO 17828, *Solid biofuels — Determination of bulk density*

ISO 17829, *Solid Biofuels — Determination of length and diameter of pellets*

ISO 17830, *Solid biofuels — Particle size distribution of disintegrated pellets*

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

ISO 17831-2, *Solid biofuels — Determination of mechanical durability of pellets and briquettes — Part 2: Briquettes*

ISO 18122, *Solid biofuels — Determination of ash content*

ISO 18123, *Solid biofuels — Determination of the content of volatile matter*

ISO 18125, *Solid biofuels — Determination of calorific value*

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 18847, *Solid biofuels — Determination of particle density of pellets and briquettes*

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

ISO 21404, *Solid biofuels — Determination of ash melting behaviour*

ISO 18846, *Solid biofuels — Determination of fines content in quantities of pellets*

3 Terms and definitions

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

3.1
chemical treatment
any treatment with chemicals other than air, water or heat

Note 1 to entry: Examples of chemical treatments are listed in informative Annex C.

3.2
commercial application
facility that utilize solid biofuel burning appliances or equipment that have similar fuel requirements as residential appliances

Note 1 to entry: Commercial applications should not be confused with industrial applications, which can utilize a much wider array of materials and have vastly different fuel requirements.

4 Symbols and abbreviated terms

The symbols and abbreviated terms used in this document conform with the SI system of units as far as possible,

A	Designation for ash content on dry basis A_d [% in mass]
ar	as received
BD	Designation for bulk density as received [kg/m^3 (loose volume)]
C	Designation for fixed carbon on dry basis C_f [% in mass]
CPF	Designation for amount of coarse pellet fines as reived [% in mass, particles ≥ 3,15 mm and < 5,6 mm]
D	Designation for diameter as received, *D* [mm]
DE	Designation for particle density as received [g/cm^3]
DT	Designation for deformation temperature of the fuel ash [°C]
DU	Designation for mechanical durability as received [% in mass]
d	dry (dry basis)
daf	dry, ash-free
E	Designation for energy density as received, E_{ar} [MJ/m^3 or kWh/m^3 loose or stacked volume] (amount of energy/volume unit)
EM_d	Designation for amount of heavy extraneous material on dry basis [% in mass]
F	Designation for amount of fines (< 3,15 mm) as determined [% in mass]
Fs	Designation for amount of small fines (< 1 mm) as determined (% in mass)
FT	Designation for flow temperature of the fuel ash [°C]
HT	Designation for hemisphere temperature of the fuel ash [°C]
L	Designation for length as received, *L* [mm]
M	Designation for moisture content as received, M_{ar} [% in mass]
P	Designation for particle size distribution on analysis moisture basis
Q	Designation for net calorific value at constant pressure as received, $Q_{p,\text{net,ar}}$ [MJ/kg or kWh/kg]
$Q_{V,\text{gr,d}}$	Gross calorific value at constant volume on dry basis [MJ/kg or kWh/kg]
$Q_{p,\text{net,d}}$	Net calorific value at constant pressure on dry basis [MJ/kg or kWh/kg]
SST	Designation for shrinkage starting temperature of the fuel ash [°C]
s	Designation for small-scale and commercial use in particle size distribution
U	Designation for moisture content as received on dry basis U_{ar} [% in mass]
VM	Designation for volatile matter on dry basis [% in mass]

NOTE 1 Fixed carbon (%) is calculated by the following: 100 – (moisture [% in mass] + ash [% in mass] + volatile matter [% in mass]). All percentages are on the same moisture basis.

NOTE 2 1 MJ/kg equals 1 GJ/t or 0,277 8 kWh/kg (1 kWh/kg equals 1 MWh/t and 1 MWh/t is 3,6 MJ/kg). 1 g/cm^3 equals 1 kg/dm^3. 1 mg/kg equals 0,000 1 %