SLOVENSKI STANDARD
SIST EN ISO 20024:2020

01-maj-2020

Trdna biogoriva - Varno skladiščenje in ravnanje s peleti trdnega biogoriva za komercialno in industrijsko uporabo (ISO 20024:2020)

Solid biofuels - Safe handling and storage of solid biofuel pellets in commercial and industrial applications (ISO 20024:2020)

Biogene Festbrennstoffe - Sicherer Umgang und Lagerung von Pellets aus biogenen Festbrennstoffen in kommerziellen und industriellen Anwendungen (ISO 20024:2020)

Biocombustibles solides - Manipulation et stockage en toute sécurité des granulés de biocombustibles solides dans des applications commerciales et industrielles (ISO 20024:2020)

Ta slovenski standard je istoveten z: **EN ISO 20024:2020**

ICS:

75.160.40	Biogoriva	Biofuels
75.200	Oprema za skladiščenje nafte, naftnih proizvodov in zemeljskega plina	Petroleum products and natural gas handling equipment

SIST EN ISO 20024:2020 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 20024

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English Version

Solid biofuels - Safe handling and storage of solid biofuel pellets in commercial and industrial applications (ISO 20024:2020)

Biocombustibles solides - Manipulation et stockage en toute sécurité des granulés de biocombustibles solides dans des applications commerciales et industrielles (ISO 20024:2020)

Biogene Festbrennstoffe - Sicherer Umgang und Lagerung von Pellets aus biogenen Festbrennstoffen in kommerziellen und industriellen Anwendungen (ISO 20024:2020)

This European Standard was approved by CEN on 9 February 2020.

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European foreword

This document (EN ISO 20024:2020) 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of an identical text or by endorsement, at the latest by September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.

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.

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The text of ISO 20024:2020 has been approved by CEN as EN ISO 20024:2020 without any modification.

INTERNATIONAL STANDARD

ISO 20024

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Solid biofuels — Safe handling and storage of solid biofuel pellets in commercial and industrial applications

Biocombustibles solides — Manutention et stockage en toute sécurité des granulés de biocombustibles solides dans des applications commerciales et industrielles

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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).

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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*.

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

There is a continuous global growth in production, storage, handling, bulk transport and use of solid biofuels especially in the form of pelletized biofuels.

The handling and storage of solid biofuels and their physical characteristics can lead to a risk for fire and/or explosion, but also health risks, for example intoxication due to exposure to carbon monoxide (CO), asphyxiation due to oxygen depletion, and allergic reactions.

There is a risk of injury or fatality associated with pellet storage so the implementation of safety measures is important. The possibility of fire and explosion incidents is a clear indicator that safety is to be prioritized, first of all for human safety but also because interruptions in energy supply will have significant consequences. The market confidence in solid biofuels as a reliable energy source will be jeopardized, and financial losses due to business interruptions could occur. Difficulty to obtain insurance coverage will also increase.

This document provides support, advice and guidance to facility owners, logistics providers, equipment suppliers/manufacturers, consultants, authorities and insurance providers to assess and mitigate risk when handling and storing solid biofuel pellets. General guidance is provided for personnel safety protection and personal precautions in accordance with generally accepted work safety requirements. As part of the determination and assessment of risks for solid biofuels, applicable quality standards and related test methods are discussed and recommendations for additional methodologies are indicated. As made of living materials, solid biofuels are subject to degradation such as ageing and moisture contamination causing variability in reactivity which requires margins in risks assessments. One shipment of solid biofuels may have substantially different physical and chemical characteristics in terms of self-heating and off-gassing than another, and therefore diligent monitoring, frequent testing and house-keeping are recommended.

Solid biofuels — Safe handling and storage of solid biofuel pellets in commercial and industrial applications

1 Scope

This document provides principles and requirements for safe handling and storage of solid biofuels pellets in commercial and industrial applications. This document is using a risk-based approach to determine what safety measures should be considered.

Facilities with a storage capacity <100 t are covered by ISO 20023. Generally, for end-user facilities with a storage capacity of <1 000 t, ISO 20023 could also be applicable if storage principle and facility complexity is in-line with the objectives of ISO 20023.

This document covers the handling and storage process of pellets in the following applications:

— at a pellet production plant from the outlet of the cooler unit until loaded for transportation;

— at a commercial distributor from the receiving station until loaded for transportation; and

— at an industrial end-user from the receiving station until fed into the fuel preparation or combustion process.

Although unloading and loading of e.g. vessels, trains or trucks are included in the operational envelops defined above, the safety aspect of the transportation itself is beyond the scope of this document.

This document also gives specific guidance on detection and suppression systems and preparatory measures to enable safe and efficient firefighting operations. Guidance on the management of fire and explosion incidents is also specified.

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 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

3 Terms and definitions

For the purposes of this document, 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 General terms

3.1.1
biofuel pellet
biofuel made with or without additives in the form of cubiform, polyhedral, polyhydric or cylindrical units with a diameter up to 25 mm, produced by compressing biomass

Note 1 to entry: Usually the biomass has been milled before densification.

Note 2 to entry: See also non-woody pellet and wood pellet.

[SOURCE: ISO 16559:2014, 4.31]

3.1.2
combustible dust
finely divided solid particles, 500 µm or less in nominal size, which may form explosive mixtures with air at standard atmospheric pressure and temperatures

Note 1 to entry: This includes dust and grit as defined in ISO 4225.

Note 2 to entry: The term 'solid particles' is intended to address particles in the solid phase but does not preclude a hollow particle.

[SOURCE: ISO/IEC 80079-20-2:2016, 3.1]

3.1.3
combustible flyings
solid particles, including fibres, where one dimension is greater than 500 µm in nominal size, which may form an explosive mixture with air at standard atmospheric pressure and temperature

Note 1 to entry: The ratio of length to width is 3 or more.

[SOURCE: ISO/IEC 80079-20-2:2016, 3.2, modified — Note 2 deleted.]

3.1.4
fines
small sized particles in fuel below a certain pre-defined size, here less than 3,15 mm

[SOURCE: ISO 16559:2014, 4.90, modified — "usually" replaced by "here" to indicate exact limit.]

3.1.5
ignition source
source of energy that initiates combustion

[SOURCE: ISO 13943:2008, 4.189]

3.1.6
product safety data sheet
specification sheet defining physical aspects, characteristics and health and safety data for a product

3.1.7
self-heating
exothermic reaction within a material resulting in a rise in temperature in the material

[SOURCE: ISO 4880:1997, 55]

3.1.8
self-ignition
ignition resulting from *self-heating* (3.1.7)

[SOURCE: ISO 4880:1997, 56]

3.1.9
smouldering
slow combustion of a material without light being visible and generally evidenced by an increase in temperature and/or by smoke

[SOURCE: ISO 4880:1997, 58]

3.1.10
wood pellet
biofuel made from woody biomass with or without additives in the form of cubiform, polyhedral, polyhydric or cylindrical units, random length and typically 3,15 mm to 40 mm, a diameter up to 25 mm and with broken ends

Note 1 to entry: The raw material for wood pellets is woody biomass in accordance with Table 1 of ISO 17225-1. Pellets are usually manufactured in a die, with total moisture content usually less than 10 % of their mass wet basis.

Note 2 to entry: The woody biomass used as feedstock for pellet making is milled to size in accordance with customer specification. Determination of the particle size distribution of the constituent of pellets is done by ISO 17830.

[SOURCE: ISO 16559:2014, 4.228]

3.2 Risk management

3.2.1
accident
incident resulting in fatality, disease, injury or other damage

[SOURCE: ISO 21101:2014, 3.25]

3.2.2
emergency
serious situation requiring immediate action

[SOURCE: ISO/TR 21102:2013, 2.8]

3.2.3
fail-safe

term applied to equipment or a system so designed that, in the event of failure or malfunction of any part of the system, devices are automatically activated to stabilize or secure the safety of the operation

[SOURCE: ISO 13628-7:2005, 3.1.49]

3.2.4
failure mode and effect analysis
FMEA
analytically derived identification of the conceivable equipment failure modes and the potential adverse effects of those modes on the system and mission

Note 1 to entry: It is primarily used as a design tool for review of critical components.

[SOURCE: ISO/TS 16901:2015, 3.11]

3.2.5
harm
injury or damage to the health of people or animals or damage to property or the environment

[SOURCE: ISO/IEC Guide 51:2014, 3.1, modified — "or animals" added.]

3.2.6
hazard
potential source of *harm* (3.2.5)

[SOURCE: ISO/IEC Guide 51:2014, 3.2]