SLOVENSKI STANDARD
SIST EN ISO 21912:2021

01-maj-2021

Trdna alternativna goriva - Varno ravnanje in skladiščenje trdnih goriv (ISO 21912:2021)

Solid recovered fuels - Safe handling and storage of solid recovered fuels (ISO 21912:2021)

Feste Sekundärbrennstoffe - Sicherer Umgang und Lagerung von festen Sekundärbrennstoffen (ISO 21912:2021)

Combustibles solides de récupération - Sécurité de la mise en oeuvre et dus stockage de combustibles solides de récupération (ISO 21912:2021)

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Solid recovered fuels - Safe handling and storage of solid recovered fuels (ISO 21912:2021)

Combustibles solides de récupération - Sécurité de la mise en oeuvre et dus stockage de combustibles solides de récupération (ISO 21912:2021)

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN ISO 21912:2021) has been prepared by Technical Committee ISO/TC 300 "Solid recovered materials, including solid recovered fuels" in collaboration with Technical Committee CEN/TC 343 “Solid Recovered Fuels” the secretariat of which is held by SFS.

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of an identical text or by endorsement, at the latest by September 2021, and conflicting national standards shall be withdrawn at the latest by September 2021.

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The text of ISO 21912:2021 has been approved by CEN as EN ISO 21912:2021 without any modification.

INTERNATIONAL STANDARD

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Solid recovered fuels — Safe handling and storage of solid recovered fuels

Combustibles solides de récupération — Sécurité de la mise en oeuvre et dus stockage de combustibles solides de récupération

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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 300, *Solid recovered fuels*.

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

Modern society is based on production and consumption of an enormous variety of products, both for industrial and private use. After its intended use, the product will be disposed as waste by the user and will then enter the chain of waste management which includes a variety of handling, storage and processing/recycling methods.

With production, handling, transportation and storage of SRF (Solid Recovered Fuels) there is always a significant risk of fire and dust explosion. A fire or an explosion provides risks both for human health and the environment and cause large economical losses. It is therefore important that operators throughout the supply chain ensure that there is a developed strategy to prevent fires and to prevent dust explosions, and if a fire should occur, a readiness to handle the fire effectively to reduce the consequences.

Fires will, in addition to economic losses and effects on health and the environment, also have a negative impact on the confidence in the SRF industry and difficulty to obtain insurance coverage might also increase.

In facilities where dry combustible materials are handled such as in SRF facilities, there are several risks present for fires and dust explosions. A typical cause for an ignition of the material is friction heat or impact ignition sources generated within the processing chain. Such ignition sources can be generated due to mechanical wear or break-down, metal pieces and stones, material overfeeding, etc. Most mechanical machines contain moving parts that potentially could generate friction heat high enough to ignite the material. Examples are shredders, conveyors, screening/separation machinery and fans. Other sources causing ignitions are for example hot surfaces, electrical discharges, hot works and self-ignition inside storages.

An ignition source can ignite the material being processed or dust accumulations inside and around the machinery. It is important to take necessary measures for reducing the risk for ignitions. Accumulations of combustible dust are intended to be avoided. However, dust can quickly accumulate to a stage where it can become a significant fire load.

This document provides support, advice and guidance to facility owners, logistics providers, equipment suppliers/manufacturers, consultants, authorities and insurance providers to assess and mitigate different risks when producing, handling and storing SRF.

Solid recovered fuels — Safe handling and storage of solid recovered fuels

1 Scope

This document provides principles and requirements for safe handling, treatment and storage of solid recovered fuels (SRF), prepared from non-hazardous waste, to be used for energy purposes. This document covers process stages from point of acceptance of material to point of delivery of SRF.

This document excludes fuels that are included in the scope of ISO/TC 238 *Solid biofuels* and ISO/TC 28 *Petroleum products and related products of synthetic or biological origin*.

It uses a risk-based approach to determine what safety measures are to be considered.

Although unloading and loading of e.g. vessels, trains or trucks are included, the safety issues following the loading and transport itself are not.

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*

ISO 21637:2020, *Solid recovered fuels — Terminology, definitions and descriptions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21637:2020 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/

3.1 Parts of the SRF process

3.1.1
baling
process of producing a compressed material bundle or package secured by wires, hoops, cords or similar

3.1.2
belt conveyor
conveyor with an endless belt acting as a carrying and traction element

Note 1 to entry: There are several belt conveyor types, such as; troughed belt conveyor, deep troughed belt conveyor, pipe belt conveyor, walled belt conveyor, flat belt conveyor and radial conveyor.

3.1.3
belt feeder
shortened form of *belt conveyor* (3.1.2), normally running at slow speed, designed to extract or control the rate of flow of bulk materials from hoppers

[SOURCE: EN 620:2002+A1:2010, 3.2.4]

3.1.4
box
storage with two or three walls

3.1.5
bucket elevator
elevator for loose bulk materials with buckets as the carrying medium attached to a belt or chains as the driving medium

Note 1 to entry: The bucket elevator consists of a strap forming belt, stretched vertically between a driving head pulley and a pulley of foot. Buckets are attached to the strap and the whole is enclosed in a metal frame.

Note 2 to entry: The foot of the elevator is equipped with a chute in which the buckets are filled by shovelling and a head shape suitable for evacuating grain by projection centrifugal.

[SOURCE: EN 618:2002+A1:2010, 3.1.3 – modified: notes to entry were added]

3.1.6
bunker
storage which is closed on four sides and reachable from the top

3.1.7
chain conveyor
conveyor for loose bulk materials with a chain as the driving medium having attached flights or scraper flights moving the material "en masse" in an enclosing trough

3.1.8
chain reclaimer
machine for loose bulk materials with a chain as driving medium having attached flights or scraper flights moving the material in an open drop-in pit or drive over pit

3.1.9
conveyor system
number of linked conveyors with their ancillary equipment and control system

[SOURCE: EN 620:2002+A1:2010, 3.1 – modified: "control system" was added]

3.1.10
crushing
mechanical reduction of *particle size* (3.3.4) by exerting mainly blunt deforming forces to a material

[SOURCE: ISO 21637:2020, 3.15]

3.1.11
density separation
separation of mixed materials by using density differences of the different fractions for classification

Note 1 to entry: With respect to SRF-production, most common application of density separation is wind shifting applying airflow as conveying/transport medium. A process of separation by different densities of particles and fluids.

3.1.12
dust collection system
system that collects free dust from the air in process systems

3.1.13
electromagnetic separation of non-ferrous metals
separation of non-ferrous metals by inducing temporary magnetic forces

Note 1 to entry: This term is also known as eddy current separators.

[SOURCE: ISO 21637:2020, 3.26]

3.1.14
enclosed conveyor
conveyor which is enclosed to avoid contamination between the interior and the exterior environment

3.1.15
enclosed storage
storage that is enclosed to avoid contamination between the interior and the exterior environment

3.1.16
feeder
mechanical device for delivering material at a controlled rate

[SOURCE: ISO 1213-1:1993, 10.1.02]

3.1.17
ferrous metal separation
separation of ferrous metals by use of permanent magnetic forces

3.1.18
fine shredding
shredding (3.1.28) of materials to an average particle size of 20 mm - 50 mm

3.1.19
idler
mechanical element rotating on internal bearing and fitted to support the belt

Note 1 to entry: On *belt conveyors* (3.1.2), several idlers can be used. These are called e.g. troughing idler (which supports the belt and maintains it in a troughed form), carrying idler, return idler.

3.1.20
main shredding
mechanical reduction of particle size of material via *shredding* (3.1.28) it to average *particle size* (3.3.4) of 50 mm - 100 mm

3.1.21
manual separation
separation of material particles individually by hand or mechanical solution

3.1.22
optical recognition
recognition of material particles individually by optical sensors

[SOURCE: ISO 21637:2020, 3.50]

3.1.23
pneumatic conveying
method of transporting bulk materials by means of air through pipes or ducts

3.1.24
pre-shredding
mechanically reducing particle size of material by *shredding* (3.1.28) it to average *particle size* (3.3.4) of 100 mm – 300 mm