



SLOVENSKI STANDARD

SIST EN 15359:2012

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Nadomešča:

SIST-TS CEN/TS 15359:2007

Trdna alternativna goriva - Specifikacije in razredi

Solid recovered fuels - Specifications and classes

Feste Sekundärbrennstoffe - Spezifikationen und Klassen

Combustibles solides de récupération - Spécification et classes

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Ta slovenski standard je istoveten z: ~~SIST EN 15359:2012~~ **EN 15359:2011**

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ICS:

75.160.10 Trda goriva

Solid fuels

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EUROPEAN STANDARD

EN 15359

NORME EUROPÉENNE

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Supersedes CEN/TS 15359:2006

English Version

Solid recovered fuels - Specifications and classes

Combustibles solides de récupération - Spécification et classes

Feste Sekundärbrennstoffe - Spezifikationen und Klassen

This European Standard was approved by CEN on 19 October 2011.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 15359:2011) has been prepared by 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of an identical text or by endorsement, at the latest by May 2012, and conflicting national standards shall be withdrawn at the latest by May 2012.

This document supersedes CEN/TS 15359:2006.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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

This document differs from CEN/TS 15359:2006 mainly as follows:

- a) it has been clarified that SRF still is a waste destined to be incinerated in combustion and co-combustion plants covered by the Directive 2000/76/EC on waste incineration (WID);
- b) in the scope NOTE 1 concerning solid biofuels has been modified;
- c) the references to community legislation have been updated;
- d) the terminology has been brought into line with EN 15357;
- e) the classification system in Clause 7 has been furnished with clarifying examples and notes – so also the compliance rules in Clause 8;
- f) the period of which a laboratory sample shall be kept has been expressed more precisely;
- g) a way to calculate the emission factor has been added in 9.3 (Properties non-obligatory to specify);
- h) a new Annex D (informative) has been added in which is demonstrated how to calculate the statistical means for different production volumes;
- i) the whole document has been editorially revised.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The objective of this document is to provide unambiguous and clear classification and specification principles for solid recovered fuels (SRF). The document aims at serving as a tool to enable efficient trading of SRF, promoting their acceptability on the fuel market and increasing the public trust. The document will facilitate a good understanding between seller and buyer, facilitate purchase, transborder movements, use and supervision as well as a good communication with equipment manufacturers. It will also facilitate authority permission procedures and ease the reporting on the use of fuels from renewable energy sources and on other environmental issues.

SRF are produced from non hazardous waste. The input waste can be production specific waste, municipal solid waste, industrial waste, commercial waste, construction and demolition waste, sewage sludge etc. It is thus obvious that SRF are a heterogeneous group of fuels. A well defined system for classification and specification is therefore of great importance to reach the above mentioned objectives and intentions.

This document covers all types of SRF and will thus have a wide field of application. The purpose of producing a solid recovered fuel is to use it for energy generation at the highest possible energy efficiency. SRF can according to Article 6 of the Waste Framework Directive (2008/98/EC) cease to be waste at Community or national level if certain criteria are fulfilled. Until such legal decisions are taken SRF can be used in plants covered by the Directive 2000/76/EC.

This document describes the compliance rules which SRF has to meet to be classified according to the classification system. It also describes how the supplier can establish a declaration of conformity to the different EN standards for SRF.

Figure 1 illustrates a simplified flow chain for SRF, from input of waste to end use of SRF. This document has an interface to all the stages in the chain, but SRF classification and specification are applicable at the point of delivery as shown in the figure. Requirements for how the input waste is collected and how to use the fuel are not part of this document.

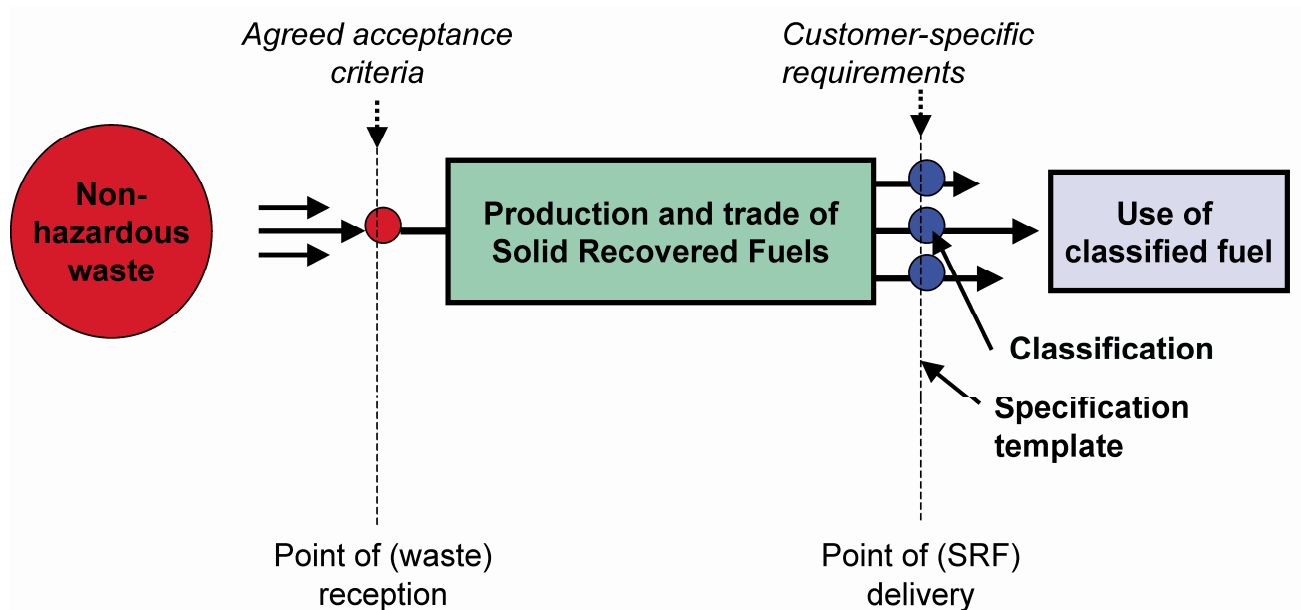


Figure 1 — Solid recovered fuels chain — The EN Standard on specifications and classes is applicable at the point of delivery

1 Scope

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This document specifies a classification system for solid recovered fuels (SRF) and a template for the specification of their properties.

[SIST EN 15359:2012](https://standards.iteh.ai/catalog/standards/sist/19fd9f09-2927-4dad-91bd-a0791c630b71/sist-en-15359-2012)

SRF are produced from non-hazardous waste.

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NOTE 1 Waste referred to in article 2(2)(a), points (i)-(v) of the Waste Incineration Directive (2000/76/EC) is not included in the scope of this document. This is covered by CEN/TC 335 "Solid biofuels". Waste wood from demolition of buildings and civil engineering installations is, however, included in the scope.

NOTE 2 Untreated municipal solid waste is not included in the scope of this document.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 15357:2011, *Solid recovered fuels — Terminology, definitions and descriptions*

EN 15400, *Solid recovered fuels — Determination of calorific value*

EN 15403, *Solid recovered fuels — Determination of ash content*

EN 15408, *Solid recovered fuels — Methods for the determination of sulphur (S), chlorine (Cl), fluorine (F) and bromine (Br) content*

EN 15411, *Solid recovered fuels — Methods for the determination of the content of trace elements (As, Ba, Be, Cd, Co, Cr, Cu, Hg, Mo, Mn, Ni, Pb, Sb, Se, Ti, V and Zn)*

EN 15359:2011 (E)

CEN/TS 15414-1:2010, *Solid recovered fuels — Determination of moisture content using the oven dry method — Part 1: Determination of total moisture by a reference method*

CEN/TS 15414-2:2010, *Solid recovered fuels — Determination of moisture content using the oven dry method — Part 2: Determination of total moisture by a simplified method*

EN 15414-3, *Solid recovered fuels — Determination of moisture content using the oven dry method — Part 3: Moisture in general analysis sample*

EN 15415-1, *Solid recovered fuels — Determination of particle size distribution — Part 1: Screen method for small dimension particles*

EN 15442, *Solid recovered fuels — Methods for sampling*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in EN 15357:2011 and the following apply.

NOTE The terms and definitions 3.1 to 3.16 are identical with the ones given in EN 15357.

3.1 classification

grouping of solid recovered fuels into classes

NOTE The classes are defined by boundary values for chosen fuel characteristics to be used for trading as well as for information of permitting authorities and other interested parties.

3.2 combined sample

sample consisting of all the increments taken from a lot

NOTE The increments may be reduced by division before being added to the combined sample.

3.3 component

part of portion of a solid recovered fuel that can be separated by hand or by using simple physical means

3.4 composition

break down of a solid recovered fuel by types of components e.g. wood, paper, board, textiles, plastics, rubber

3.5 delivery agreement

contract for fuel trade, which specifies e.g. origin and source, quality and quantity of the fuel, as well as delivery terms

3.6 increment

portion of fuel extracted in a single operation of the sampling device

[ISO 13909:2001]

3.7

laboratory sample

part of the sample sent to or received by the laboratory

NOTE 1 When the laboratory sample is further prepared (reduced) by subdividing, mixing, grinding, or by combinations of these operations, the result is the test sample. When no preparation of the laboratory sample is required, the laboratory sample is the test sample. A test portion is removed from the test sample for the performance of the test or for analysis.

NOTE 2 The laboratory sample is the final sample from the point of view of sample collection but it is the initial sample from the point of view of the laboratory.

NOTE 3 Several laboratory samples may be prepared and sent to different laboratories or to the same laboratory for different purposes. When sent to the same laboratory, the set is generally considered as a single laboratory sample and is documented as a single sample.

3.8

lot

defined quantity of fuel for which the quality is to be determined

NOTE 1 See also sub-lot.

[ISO 13909:2001]

3.9

net calorific value

calculated value of the energy of combustion for unit of mass of a fuel burned in oxygen in calorimetric bomb under such conditions that all water of the reaction products remains as water vapour at 0,1 MPa

NOTE 1 The net calorific value can be determined at constant pressure or at constant volume. The net calorific value at constant pressure is however the generally used.

NOTE 2 See also calorific value and gross calorific value.
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3.10

point of delivery

location specified in the delivery agreement, at which the proprietary rights of and responsibility for a fuel are transferred from one organization or unit to another

3.11

producer

organization or unit responsible for the production of the fuel

NOTE The producer can also be the supplier of the fuel.

3.12

solid recovered fuel

solid fuel prepared from non-hazardous waste to be utilised for energy recovery in incineration or co-incineration plants and meeting the classification and specification requirements laid down in this European Standard

NOTE "Prepared" here means processed, homogenised and up-graded to a quality that can be traded amongst producers and users.

3.13

specification

document stating requirements

[EN ISO 9000:2005]

EN 15359:2011 (E)**3.14****specification of solid recovered fuels**

specification for the properties characterising a solid recovered fuel

NOTE A template for such specification is given in Annex A.

3.15**sub-lot**

part of a lot for which a test result is required

3.16**sub-sample**

portion of a sample

NOTE 1 A sub-sample is obtained by procedures in which the items of interest are randomly distributed in part of equal or unequal size.

NOTE 2 A sub-sample may be either a portion of the sample obtained by selection or division of the sample itself, or the final sample of a multistage sample preparation.

3.17**supplier**

organization or unit that provides the fuel

4 Symbols and abbreviations

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The symbols and abbreviations used in this European Standard comply with the SI system of units as far as possible.

Item	Symbol	Abbreviation
net calorific value	$q_{p,net}$	NCV
gross calorific value	$q_{V,gr}$	GCV
as received		ar
dry basis		d
particle diameter		d

5 Principles

The classification system is based on three important characteristics, referred to the main SRF characteristics: an economic characteristic (net calorific value), a technical characteristic (chlorine content) and an environmental characteristic (mercury content). The characteristics are chosen to give a stakeholder an immediate but simplified picture of the fuel in question.

Only fuels derived from non hazardous waste that meet the SRF European Standards can be classified as SRF.

The classification itself is not enough for an intending user. A user has to have a more detailed description of the fuel. Relevant fuel properties are thus to be further specified. Some of the fuel properties are so important that they are obligatory to specify whereas others can be recorded voluntarily, e.g. upon request of the user.

It is important that SRF meet specified quality requirements which are to be determined based on a defined lot size by a minimum number of measurements.

6 Requirements and declaration of conformity

In conformity with this document, SRF shall comply with the following requirements:

- a) SRF shall be classified according to the system in Clause 7;
- b) SRF shall meet quality requirements according to given compliance rules in Clause 8;
- c) SRF properties shall be specified according to Clause 9.

The producer/supplier of solid recovered fuel shall give a declaration of conformity to this document. The record shall be kept available for inspection. A model template for the declaration is given in Annex C.

NOTE General criteria for a supplier's declaration is given in EN ISO/IEC 17050-1:2010 and EN ISO/IEC 17050-2:2004.

7 Classification

The classification system (Table 1) for SRF is based on limit values for three important fuel characteristics. These are:

- a) the mean value for net calorific value (ar);
- b) the mean value for chlorine content (d);
- c) the median and 80th percentile values for mercury content (ar).

Each characteristic is divided into 5 classes. The SRF shall be assigned a class number from 1 to 5 for each characteristic. A combination of the class numbers makes up the class code (see example below). The characteristics are of equal importance and thus no single class number determines the code.

The class code shall be included in the specification as described in Clause 9.

Due to the statistical distribution pattern of the characteristics the values shall be presented as:

- net calorific value (NCV) mean (arithmetic);
- chlorine content (Cl) mean (arithmetic);
- mercury content (Hg) median and 80th percentile.

The higher of the two statistical values (median and 80th percentile) in a Hg data set determines the class.

EXAMPLE A SRF with a median value of 0,03 and a 80th percentile value of 0,07 belongs to Hg class 3 (according to Table 1).

For the determination of NCV EN 15400, for Cl EN 15408 and for Hg EN 15411 shall be used.

NOTE 1 80th percentile is the value on or below which 80 % of the observations fall.

NOTE 2 For details on statistics see CEN/TR 15508 [5].

NOTE 3 The averages and percentiles are determined on the quantity of SRF as specified in Clause 8.