
Trdno alternativno gorivo - Specifikacije in razredi

Solid recovered fuels - Specifications and classes

Feste Sekundärbrennstoffe - Spezifikationen und Klassen

Combustibles solides de récupération - Spécification et classes

Ta slovenski standard je istoveten z: CEN/TS 15359:2006

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ICS:

75.160.10	Trda goriva	Solid fuels
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English Version

Solid recovered fuels - Specifications and classes

Combustibles solides de récupération - Spécification et classes

Feste Sekundärbrennstoffe - Spezifikationen und Klassen

This Technical Specification (CEN/TS) was approved by CEN on 21 February 2006 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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Foreword

This Technical Specification (CEN/TS 15359:2006) has been prepared by Technical Committee CEN/TC 343 “Solid recovered fuels”, the secretariat of which is held by SFS.

The scope for this Technical Specification is based on the mandate M/325 given by the European Commission to CEN on 2002-08-26.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification: Austria, Belgium, 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.

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Introduction

The objective of this Technical Specification is to provide unambiguous and clear classification and specification principles for Solid Recovered Fuels (SRFs). The Technical Specification aims at serving as a tool to enable efficient trading of SRFs, promoting their acceptability on the fuel market and increasing the public trust. The Technical Specification 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.

SRFs are produced from non hazardous waste.¹⁾ 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 SRFs 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 Technical Specification covers all types of SRFs and will thus have a wide field of application. It supports the objectives and implementation of the EU waste hierarchy as defined in article 3.1 of the waste framework directive 75/442 modified by the directive 91/156.

This Technical Specification describes the compliance rules which a 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 Technical Specifications for SRFs (see Clause 2).

Figure 1 illustrates a simplified flow chain for SRFs, from input of waste to end use of SRFs. This Technical Specification 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 Technical Specification.

¹⁾ Hazardous waste is defined in the Directive on hazardous waste (91/689/EEC) and its amendments, and are elucidated and exemplified in the waste list ((Commission decision 2000/532) and its amendments, in particular 2001/118/EC).

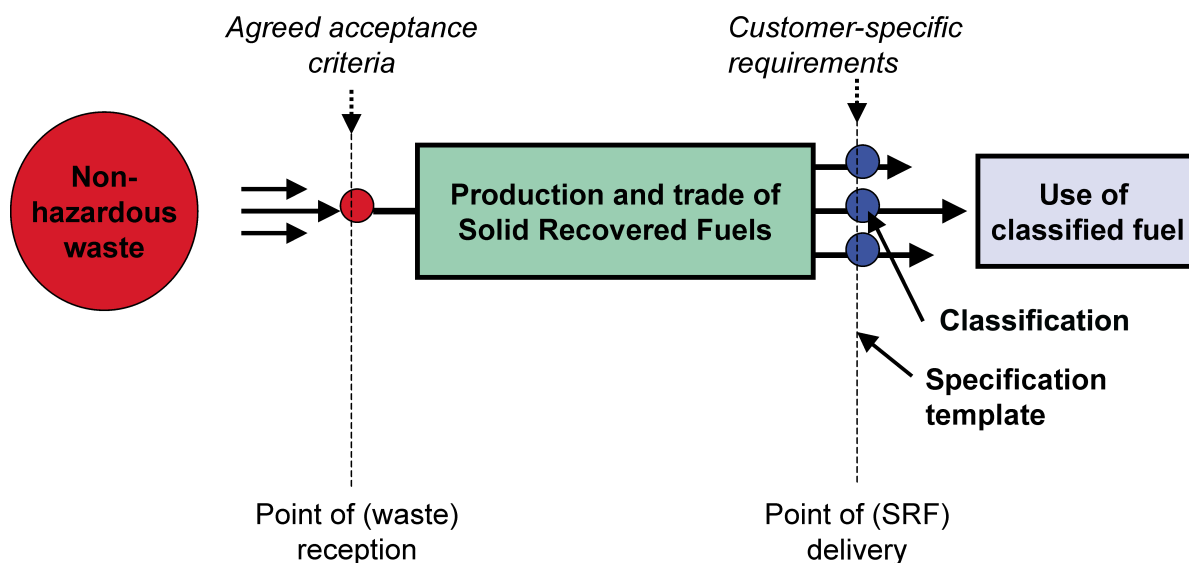


Figure 1 — Solid recovered fuels chain — The Technical Specification on specification and classes is applicable at the point of delivery

1 Scope

This Technical Specification specifies a classification system for SRFs and a template for the specification of their properties.

SRFs are produced from non-hazardous waste.

NOTE 1 Solid bio-fuels excluded from the Waste Incineration Directive (2000/76/EC) are not included in the scope of this Technical Specification. These are dealt with in 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 Technical Specification.

2 Normative references

The following referenced documents are indispensable for the application of this Technical Specification. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 15357:2006, *Solid recovered fuels — Terminology, definitions and descriptions*

prCEN/TS 15442, *Solid recovered fuels — Methods for sampling*

prCEN/TS 15443, *Solid recovered fuels — Methods for laboratory sample preparation*

prCEN/TS 15400, *Solid recovered fuels — Methods for the determination of calorific values*

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

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

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

prCEN/TS 15403, *Solid recovered fuels — Methods for the determination of ash content*

prCEN/TS 15415, *Solid recovered fuels —Determination of particle size and particle size distribution by screen method*

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

prCEN/TS 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, Tl, V and Zn)*

3 Terms and definitions

For the purpose of this Technical Specification, the terms and definitions given in CEN/TS 15357:2006 and the following apply.

NOTE The terms and definitions 3.1 to 3.9 are identical with the ones given in CEN/TS 15357:2006.

3.1

classification of solid recovered fuel
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

composition of solid recovered fuel

break down of solid recovered fuels by types of contained materials, e.g. wood, paper, board, textiles, plastics, rubber

3.3

delivery agreement

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

3.4

lot

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

NOTE Adapted from CEN/TS 14588:2003 [8].

3.5

net calorific value

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

NOTE Old term is lower heating value.

3.6

point of delivery

location specified in the delivery agreement, at which the proprietary rights of and responsibility for a solid recovered fuel are transferred from one organisation to an other

3.7

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 CEN/TS 15359

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

3.8

specification

document stating requirements

[EN ISO 9000:2005] [9]

3.9

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 of CEN/TS 15359.

3.10

supplier

organisation or person that provides a product

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4 Symbols and abbreviations

The symbols and abbreviations used in this Technical Specification 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 parameters, referred to the main SRFs properties: an economical parameter (net calorific value), a technical parameter (chlorine content) and an environmental parameter (mercury content). The parameters 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 SRFs standards can be classified as SRFs.

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 SRFs meet specified quality requirements which are to be determined on a defined lot size by a minimum number of measurements.

6 Requirements and declaration of conformity

In conformity with this Technical Specification, SRFs shall comply with the following requirements:

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

The producer/supplier shall give a declaration of conformity to this Technical Specification. 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 17050-1:2004 and EN ISO/IEC 17050-2:2004.

7 Classification

The classification system (Table 1) for SRFs is based on limit values for three important fuel properties. 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 property is divided into 5 classes with limit values. The SRF shall be assigned a class number from 1 to 5 for each property. A combination of the class numbers makes up the class code (see example below). The parameters 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 properties 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 highest of the two statistical values (median and 80th percentile) in a Hg data set determines the class (a SRF with a median value of 0,03 and a 80th percentile value of 0,07 belongs to Hg class 3).

For NCV, Cl and Hg the test methods in the corresponding prCEN/TS 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 Report prCEN/TR 15508 "Key properties of solid recovered fuels to be used for establishing a classification system".

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

NOTE 4 The classes have been determined as a tool for identifying and pre-selecting SRF. However, the performances of the plant where a SRF is used are depending on the properties of the SRF and more significantly on the design and operating conditions of such a plant.