



SLOVENSKI STANDARD
SIST-TS CEN/TS 14780:2005

01-november-2005

Trdna biogoriva – Metode za pripravo vzorcev

Solid biofuels - Methods for sample preparation

Feste Biobrennstoffe - Verfahren zur Probenherstellung

Biocombustibles solides - Méthodes de préparation des échantillons

Ta slovenski standard je istoveten z: CEN/TS 14780:2005

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ICS:

75.160.10 Trda goriva Solid fuels

SIST-TS CEN/TS 14780:2005 **en**

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TECHNICAL SPECIFICATION
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CEN/TS 14780

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ICS 75.160.10

English Version

Solid biofuels - Methods for sample preparation

Biocombustibles solides - Méthodes de préparation des échantillons

Feste Biobrennstoffe - Verfahren zur Probenherstellung

This Technical Specification (CEN/TS) was approved by CEN on 19 March 2005 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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Contents		Page
Foreword		3
Introduction		4
1 Scope		5
2 Normative references		5
3 Terms and definitions		5
4 Symbols and abbreviations		7
5 Principles of correct sample reduction		7
6 Apparatus		7
7 Sample reduction – general principles		10
8 Methods for reducing combined samples		12
9 Method for reducing laboratory samples to sub-samples and general analysis samples		15
10 Storage and labelling of sub-samples		18
Bibliography		19

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Foreword

This Technical Specification (CEN/TS 14780:2005) has been prepared by Technical Committee CEN/TC 335 “Solid biofuels”, the secretariat of which is held by SIS.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this 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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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CEN/TS 14780:2005 (E)**Introduction**

Biofuels are a major source of renewable energy. Technical Specifications are needed for production, trade and use of solid biofuels. For sampling and sample preparation of biofuels the following Technical Specifications can be used:

CEN/TS 14778-1, *Solid biofuels Sampling – Part 1: Methods for sampling*

CEN/TS 14778-2, *Solid Biofuels Sampling – Part 2: Methods for sampling particulate material transported in lorries*

CEN/TS 14779, *Solid biofuels – Sampling – Methods for preparing sampling plans and sampling certificates*

CEN/TS 14780, *Solid biofuels - Methods for sample preparation*

Current practice and the best available knowledge have been used to write these Technical Specifications. The results of recent sampling experiments may be used to improve the sampling plans.

These Technical Specifications can be used by production and trading of solid biofuels. They are also useful for buyers of solid biofuels, regulators, controllers and laboratories.

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1 Scope

This Technical Specification describes methods for reducing combined samples to laboratory samples and laboratory samples to sub-samples and general analysis samples, and is applicable to solid biofuels that are either:

- fine and regularly-shaped particulate materials, particle sizes up to about 10 mm that can be sampled using a scoop or pipe, for example: sawdust, olive stones and wood pellets;
- coarse or irregularly-shaped particulate materials, particle sizes up to about 200 mm that can be sampled using a fork or shovel, for example: wood chips and nut shells, forest residue chips, and loose straw;
- large pieces with nominal top size above 200 mm;

The methods described in this Technical Specification may be used for sample preparation, for example, when the samples are to be tested for bulk density, durability, particle size distribution, moisture content, ash content, ash melting behaviour, calorific value, chemical composition, and impurities. The methods are not intended to be applied to the very large samples required for the testing of bridging properties.

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.

CEN/TS 14588, *Solid biofuels – Terminology, definitions and descriptions.*

<https://standards.iteh.ai/catalog/standards/sist/2cbb1a60-a20e-49a2-84bc-d9a2123d-f1c0/cen-ts-14780-2005>

CEN/TS 14774-1, *Solid biofuels – Methods for determination of moisture content – Oven dry method – Part 1: Total moisture – Reference method.*

CEN/TS 14774-2, *Solid biofuels – Methods for determination of moisture content – Oven dry method – Part 2: Total moisture – Simplified procedure.*

CEN/TS 15149 (all parts), *Solid biofuels – Methods for the determination of particle size distribution.*

3 Terms and definitions

For the purposes of this Technical Specification, the terms and definitions given in CEN/TS 14588 and the following apply.

3.1

combined sample

sample consisting of all the increments taken from a sub-lot

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

3.2

common sample

sample collected for more than one intended use

NOTE Adapted from ISO 13909

CEN/TS 14780:2005 (E)**3.3****general analysis sample**

sub-sample of a laboratory sample having a nominal top size of 1 mm or less and used for a number of chemical and physical analyses

3.4**increment**

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

NOTE Adapted from ISO 13909

3.5**laboratory sample**

combined sample, or a sub-sample of a combined sample, or an increment, or a sub-sample of an increment sent to a laboratory

3.6**lot**

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

NOTE 1 See also sub-lot.

NOTE 2 Adapted from ISO 13909

3.7**mass-reduction**

reduction of the mass of a sample or sub-sample

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3.8**moisture analysis sample**

sample taken specifically for the purpose of determining total moisture according to EN 14774 part 1 and part 2

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3.9**nominal top size**

aperture size of the sieve used in the CEN/TS 15149 method for determining the particle size distribution of solid biofuels through which at least 95 % by mass of the material passes

NOTE Adapted from ISO 13909

3.10**sample**

quantity of material, representative of a larger quantity for which the quality is to be determined

3.11**size analysis sample**

sample taken specifically for the purpose of determining particle size distribution

3.12**size-reduction**

reduction of the nominal top size of a sample or sub-sample

3.13**sub-lot**

part of a lot for which a test result is required

NOTE Adapted from ISO 13909

EXAMPLE Consider a power station that receives 20 lorry-loads of wood chips a day. Every single lorry-load is tested for moisture content. One lorry-load is selected at random for other tests. In this example, the lot could be the quantity of fuel delivered in a day (20 lorry-loads) and the sub-lot could be a single lorry-load.

3.14

sub-sample

portion of a sample

3.15

test portion

sub-sample of a laboratory sample consisting of the quantity of material required for a single execution of a test method

4 Symbols and abbreviations

d nominal top size, mm

m mass of a sample, g

M moisture, %

5 Principles of correct sample reduction

The main purpose of sample preparation is that a sample is reduced to one or more test portions that are in general smaller than the original sample. The main principle for sample reduction is that the composition of the sample as taken on site shall not be changed during each stage of the sample preparation. Each sub sample shall be representative for the original sample. To reach this goal every particle in the sample before mass-reduction shall have an equal probability of being included in the sub-sample retained after mass-reduction during a mass-reduction stage. Two basic methods are used during the sample preparation. These methods are:

- Mass-reduction of the sample by division, <https://standards.iteh.ai/catalog/standards/sist/2cbb1a60-a20e-49a2-84bc-49477828c08/sist-ts-cen-ts-14780-2005>
- Particle size-reduction of the sample.

Care is needed to avoid loss of fine particles during milling and other operations.

If a sub-sample is required for the determination of moisture content, then the sample reduction shall be carried out by a procedure that does not conflict with the requirements of CEN/TS 14774 (determination of moisture content). It is recommended that, if moisture content of the material (as sampled) is to be determined, a separate moisture analysis sample is taken (as there is a risk of changing the moisture content by sample reduction operations).

For materials that have to be examined for moisture content, care must be taken for any significant heat build-up and risk of drying.

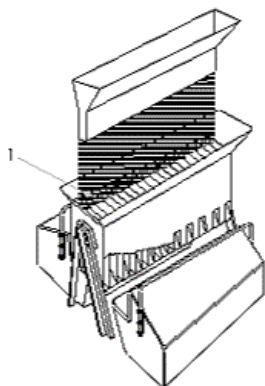
6 Apparatus

6.1 Apparatus for mass-reduction

6.1.1 Riffle boxes

A riffle box shall have at least 16 slots, with adjacent slots directing material into different sub-samples, and the width of the slots shall be at least 2,5 times the nominal top size of the material to be riffled (see Figure 1).

CEN/TS 14780:2005 (E)

**Key**

1 slot, width is at least the nominal top size of the material

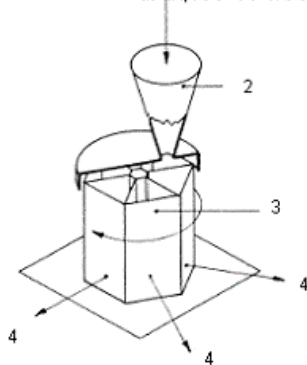
Figure 1 — Example of a riffle box

6.1.2 Rotary sample dividers

A rotary sample divider shall have a feeder device adjusted so that the divider rotates at least 20 times while the sample is being divided. See Figure 2 for an example of a rotating divider.

The manufacturers manual shall always be followed. The inner dimensions of the equipment where the sample is fed shall be at least 2,5 times as wide as the nominal top size of the material to be processed.

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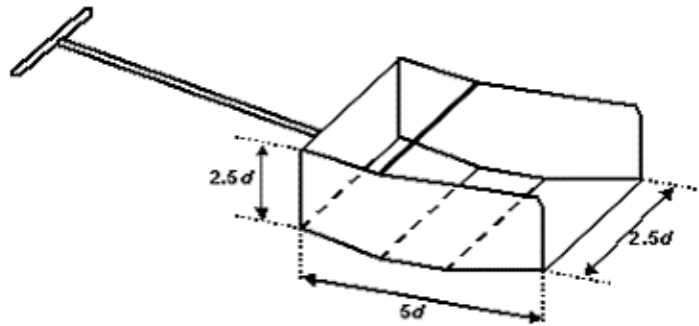
**Key**

- 1 feeder
- 2 funnel
- 3 rotating receiver
- 4 divided sample

Figure 2 — Example of a rotary sample divider

6.1.3 Shovels and scoops

A shovel or scoop used for manual mass-reduction shall have a flat bottom, edges raised high enough to prevent particles rolling off, and shall be at least 2,5 times as wide as the nominal top size of the material to be processed. See Figures 3 and 4 for examples of a scoop and a shovel respectively.



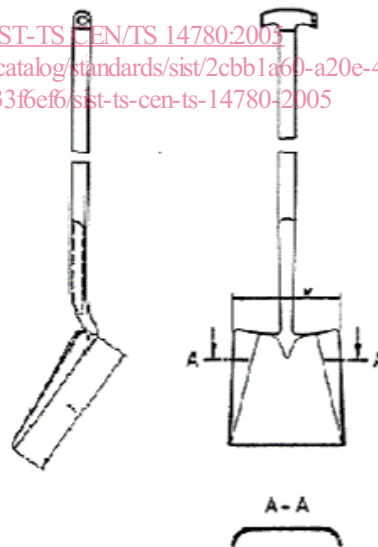
Key

d is the nominal top size

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Figure 3 — Example of a scoop

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Key

l is the length of the shovel
 $A - A$ is the width of the shovel

Figure 4 — Example of a shovel