SLOVENSKI STANDARD
SIST-TS CEN/TS 14778-1:2006

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Trdna biogoriva ï Vzorļ enje ï 1. del: Metode vzorļ enja

Solid biofuels - Sampling - Part 1: Methods for sampling

Feste Biobrennstoffe - Probenahme - Teil 1: Verfahren zur Probenahme

Biocombustibles solides - Echantillonnage - Partie 1: Méthodes d'échantillonnage

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ICS:

75.160.10 Trda goriva Solid fuels

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Solid biofuels - Sampling - Part 1: Methods for sampling

Biocombustibles solides - Echantillonnage - Partie 1: Méthodes d'échantillonnage

Feste Biobrennstoffe - Probenahme - Teil 1: Verfahren zur Probenahme

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Foreword

This Technical Specification (CEN/TS 14778-1:2005) has been prepared by Technical Committee CEN/TC 335 “Solid biofuels”, the secretariat of which is held by SIS.

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Introduction

Biofuels are a mayor 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.

1 Scope

This Part of this Technical Specification describes methods for taking samples of solid biofuels, for example, from the place where the raw materials grow, from production plant, from deliveries, or from stock. It includes both manual and mechanical methods, 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;

— baled materials that require a special sampling tool to be used if the bales are not to be broken open for sampling, for example: baled straw or grass;

— large pieces (particles sizes above 200 mm) which are to be picked manually;

— fibrous and vegetable waste dewatered in belt press.

The methods described in this Technical Specification may be used, 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 for obtaining the very large samples required for the testing of bridging properties. Informative Annex B gives recommendations for the sampling frequency for different situations. Part 2 of this Technical Specification describes methods to be used in the particular situation when samples are to be taken from lorry-loads of solid biofuels.

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.*

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 14779, *Solid biofuels – Sampling - Methods for preparing sampling plans and sampling certificates.*

CEN/TS 14780, *Solid biofuels – Method for sample preparation*.

CEN/TS 15149 (all parts), *Solid biofuels – Method for particle size distribution*.

ISO 13909-8, *Hard coal and coke – Mechanical sampling – Part 8: Methods of testing for bias.*

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 13909:2002

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 13909:2002

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 13909:2002

3.7
mass-reduction
reduction of the mass of a sample or sub-sample

3.8
moisture analysis sample
sample taken specifically for the purpose of determining total moisture according to CEN/TS 14774-1 and CEN/TS 14774-2

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 13909:2002

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 13909:2002

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_{lot} mass of the lot or sub-lot, tonnes

n number of increments

V volume of an increment or sample, litre

5 Principle of correct sampling

The main principle of sampling is to get a representative sample (samples) from the whole lot concerned. Every particle in the lot or sub-lot to be represented by the sample should have an equal probability of being included in the sample. When this principle cannot be applied in practice, the sampler shall note the limitations in the sampling plan.

6 Precision of sampling

Information on the precision of sampling will be added when results from practice are available.

7 Sampling of particulate materials

7.1 Apparatus for sampling

For manual sampling, sampling boxes shall be used for sampling falling streams, for example, from a moving belt. Scoops, pipes, shovels, or forks shall be used for sampling stationary material, according to the size of the material (as given in the Scope of this Technical Specification). Scoops and shovels shall have raised edges similar to those shown in Figures 1 and 2. When using a fork, there is a risk that the smaller particles of the material being sampled will fall between the teeth of the fork. The sampler shall check that the fork to be

used for sampling a material has teeth sufficiently close together so that particles do not fall between the teeth. Any material losses will affect the quality of the sample.

Unbiased mechanical equipment shall be used. Bias shall be tested according to ISO 13909-8.

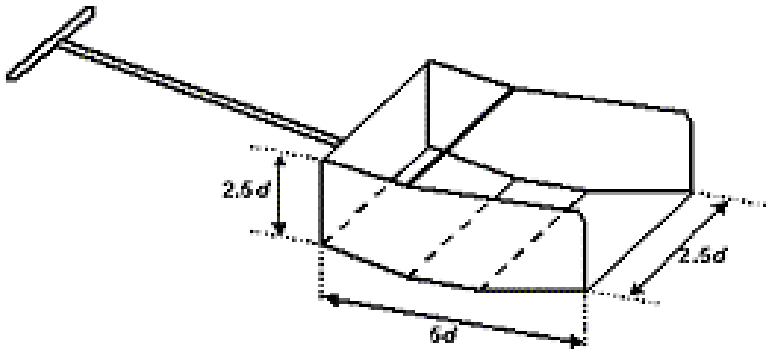
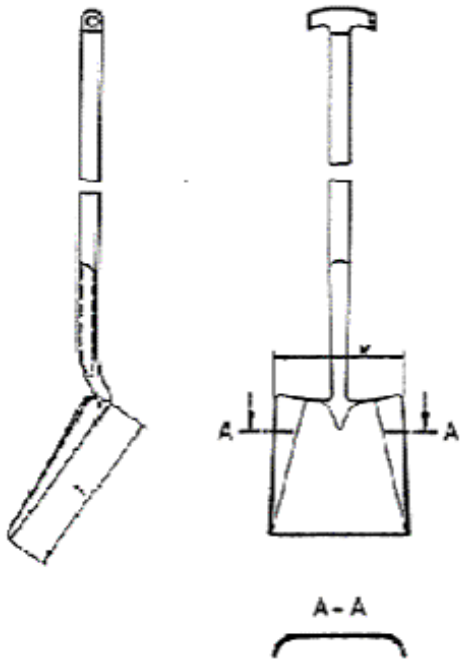


Figure 1 — Example of a scoop

Figure 2 — Example of a sampling box



Key

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

Figure 3 — Example of a shovel

Figure 4 — Example of a fork