SLOVENSKI STANDARD
SIST-TS CEN/TS 14774-2:2004

01-november-2004

Trdna biogoriva ï Metoda doloļ evanja vlage ï Metoda suġenja v peļ i ï 2. del: Celotna vlaga ï Poenostavljena metoda

Solid biofuels - Methods for the determination of moisture content - Oven dry method - Part 2: Total moisture - Simplified method

Feste Biobrennstoffe - Verfahren zur Bestimmung des Wassergehaltes - Verfahren der Ofentrocknung - Teil 12: Gehalt an Gesamtwasser - Vereinfachtes Verfahren

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Biocombustibles solides - Détermination de l'humidité - Méthode par séchage a l'étuve - Partie 2: Humidité totale - Procédure simplifiée

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Ta slovenski standard je istoveten z: **CEN/TS 14774-2:2004**

ICS:

75.160.10	Trda goriva	Solid fuels

SIST-TS CEN/TS 14774-2:2004 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 14774-2

August 2004

ICS 75.160.10

English version

Solid biofuels - Methods for the determination of moisture content - Oven dry method - Part 2: Total moisture - Simplified method

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This Technical Specification (CEN/TS) was approved by CEN on 19 January 2004 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 document (CEN/TS 14774-2:2004) 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 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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Introduction

CEN/TS 14774 consists of the following parts under the general title *Solid Biofuels – Methods for the determination of moisture content – Oven dry methods.*

Part 1 Total moisture – Reference method

Part 2 Total moisture – Simplified method

Part 3 Moisture in general analysis sample

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1 Scope

This document describes the method of determining the total moisture content of a sample of solid biofuels by drying in an oven and may be used when the highest precision is not needed e.g. for routine production control on site. The method described in this document is applicable to all solid biofuels.

The total moisture content of biofuels is not an absolute value and conditions for its determination have to be standardised to enable comparative determinations to be made.

NOTE The term moisture content when used with biomass materials can be misleading since untreated biomass frequently contains varying amounts of volatile compounds (extractives) which may evaporate when determining moisture content by oven drying.

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 14588:2003, *Solid Biofuels – Terminology, definitions and description*

prCEN/TS 14778, *Solid Biofuels - Methods of sampling*

prCEN/TS 14779, *Solid Biofuels – Methods for preparing sampling plans and sampling certificates*

prCEN/TS 14780, *Solid Biofuels - Methods of sample reduction*

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3 Terms and definitions

For the purpose of this document, the terms and definitions given in CEN/TS 14588:2003 apply.

4 Principle

The sample of biofuel is dried at a temperature of 105 °C in air atmosphere until constant mass is achieved and the percentage moisture calculated from the loss in mass of the sample.

5 Apparatus

5.1 Drying oven, capable of being controlled (manufacturers specification) at a temperature within the range of (105 ± 2) °C and in which the air atmosphere changes between 3 and 5 times per hour. The air velocity should be such that the sample particles are not dislodged from their drying container.

5.2 Suitable drying containers, of non-corrodible and heat-resistant material as e.g. metal trays, glass-or porcelain dishes.

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5.3 Balance, having sufficient accuracy to enable the sample and drying container, as received, to be weighed to the nearest 0,1 g.

6 Sample preparation

6.1 Samples for the determination of total moisture shall be sampled and prepared in accordance with prCEN/TS 14778 and prCEN/TS 14780 and shall be received in the laboratory in sealed water resistant air-tight containers or bags.

NOTE Precautions should be carried out to ensure not loosing moisture during preparation of the sample. Coarse materials for example small wood and chunk wood should be prepared by using equipment appropriate for the fuel type e.g. slow rotation grinder, handsaw, axe or knife to a thickness of maximum 30 mm for the test material. Weigh the sample for determination of moisture content immediately after this sample preparation.

6.2 The sample mass shall be minimum 300 g but preferably more than 500 g.

NOTE For large particle size samples with a nominal top size of 100 mm, a sample mass of 1 - 2 kg is preferred.

7. Procedure

7.1 Weigh an empty clean drying container to the nearest 0,1 g, transfer the sample from the container or bag to the drying container. In case of moisture left on the inner surfaces of the bag or container, this amount of moisture shall be included in the calculation of the moisture content. Dry the sample packing (container, bag etc.) in the oven and weigh the packing before and after the drying. If the packing material cannot stand for the 105 °C, dry it at room temperature by placing it open in the laboratory. As an alternative for some types of biofuels which can re-absorb condensed moisture (e.g. saw dust), it is permissible that the bag or container together with the sample it contains is shaken so that the condensed moisture is fully re-absorbed into the sample.

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NOTE 1 As the necessary drying time among other things depends of the thickness of the sample layer, too depth sample layers should be avoided.

NOTE 2 Do not use larger dimension of the drying container than necessary in relation to the size of the sample due to buoyancy when hot weighing is undertaken (see CEN/TS 14774).

7.2 Weigh the drying container with the sample and place it in the oven controlled at (105 ± 2) °C. Heat the container with the sample until constant in mass as detailed in 7.3.

NOTE Do not overload the drying cabinet. There should be enough empty room over the sample layer and also between the drying containers.

7.3 Solid biofuels are hygroscopic and the drying container with the sample shall be re-weighed to the nearest 0,1 g when still hot within 10 to 15 seconds to avoid absorption of moisture. Use heat-insulating material on the balance pan to protect it from direct contact with the hot drying container. Constancy in mass is defined as a change not exceeding 0,2 % of the total loss in mass during a further period of heating at (105 ± 2) °C over a period of 60 min. The drying time required will depend on the particle size of the sample, the rate of atmosphere change in oven, the thickness of the sample layer etc.

NOTE 1 To prevent unnecessary losses of volatile compounds, generally the drying time should not exceed 24 hours.

NOTE 2 The required drying time can be determined in pre-tests on similar fuel types with comparable particle size.