
HfXbc`UHfbUHj bc [cf]j c!Dcfc]c`c`fYUHj b]fUn`_]`a YX`V]cfUn[fUX`]j]a `]b
V]c[Yb]a `XY`YyYa `H5 ;

Solid recovered fuels - Report on relative difference between biodegradable and biogenic fractions of SRF

Feste Sekundärbrennstoffe - Bericht über den relativen Unterschied zwischen biologisch abbaubaren und biogenen Anteilen von festen Sekundärbrennstoffen

Combustibles solides de récupération - Rapport portant sur la différence relative entre les fractions biodégradable et biogène des combustibles solides de récupération

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ICS:

75.160.10 Trda goriva Solid fuels

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ICS 75.160.10

English version

**Solid recovered fuels - Report on relative difference between
biodegradable and biogenic fractions of SRF**

Feste Sekundärbrennstoffe - Bericht über den relativen
Unterschied zwischen biologisch abbaubaren und biogenen
Anteilen von festen Sekundärbrennstoffen

This Technical Report was approved by CEN on 29 October 2004. It has been drawn up by the Technical Committee CEN/TC 343.

CEN members are the national standards bodies of 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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Foreword

This document (CEN/TR 14980:2004) has been prepared by Technical Committee CEN/TC 343 “Solid recovered fuels”, the secretariat of which is held by SFS.

This document has been prepared under the Mandate M/325 to CEN on Solid Recovered Fuels [1] to provide the European Commission with a report on the relative difference between the biodegradable and the biogenic fraction of waste in order to decide whether there is a need to develop two different standards or only one.

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Introduction

In a long term perspective of Sustainable Development, it is crucial to use resources as efficiently as possible. Natural, as well as financial, resources' use should be optimised to limit as far as possible the effects on human health and on environment, while creating wealth more easily accessible to all fractions of the world population. In a medium term perspective, climate change effects due to greenhouse gas emissions from human activities should be properly addressed. Shorter term issues such as energy security of supply remain a permanent concern as well.

Solid Recovered Fuels (SRF) are fuels prepared from non hazardous waste to be utilised for energy recovery in waste incineration or co-incineration plants regulated under Community environmental legislation [1].

SRFs play an important role in the EU Community energy policy (see CEN/TR 14745:2003 [2]). The cost benefit analysis has shown that the use of SRF contributes to the reduction of greenhouse gases. The use of SRFs is particularly important in sparsely populated areas. It also serves a means to meet the targets of the Landfill Directive [3] by reducing landfilling of biodegradable waste.

Solid Recovered Fuels (SRF), by replacing e.g. fossil fuels and limiting the volumes of waste sent to landfills, can contribute to increasing resource efficiency. If based on biomass, their use will prevent emissions from fossil carbon into the atmosphere and decrease correspondingly greenhouse gases emissions from anthropogenic activities; biomass based SRF is a source of storable solar energy. The Commission Decision of 29/01/2004 establishes guidelines for monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC (7).

Due e.g. to the existence of legislative measures in favour of electricity based on renewable resources, there is a need for clear commonly agreed terminology and test methods for SRF.

To be able to make any decisions on test methods needed for the determination of the biodegradable fraction and the biogenic fraction of solid recovered fuels it is necessary to have clear definitions on these terms. The terms biodegradable and biogenic do not mean the same thing. Biodegradable relates to the degradation of a material, while biogenic relates to its formation and origin.

Definitions in relevant EU directives have been taken into consideration and are listed in Chapter 4 "Definitions on biodegradable, biogenic and biomass". In EU directives 2001/77/EC [4] on the promotion of electricity produced from renewable energy sources in the internal electricity market (RES-E), biomass is identified as a renewable energy source and is defined as the "*biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste*". As this definition concerns only the degrading of biomass an additional clarification concerning its short-cyclic origin was needed.

The term biogenic is used in the context of the Kyoto protocol.

Requirements on the definitions:

- a) The definitions need to be as clear as possible.
- b) The definitions need to comply with the difference between short-cyclic organic matter such as wood and long-cycle carbon based¹ organic matter such as coal and petroleum based plastics. When the

¹ Long C-cycle takes thousands of years to close the loop C back to C (fossilisation).

regeneration of a fuel takes thousands of years it cannot be considered as participating to the short C-cycle and is therefore no longer short-cycle carbon based².

c) The results of the definitions need to be manageable in practical situations such as laboratory analyses.

In Chapter 4 "Definitions on biodegradable, biogenic and biomass", definitions for the purpose of this report are given. With these definitions as a base, different methods of analysis are discussed. To be suitable in practice a method has to give a good approximation of the biodegradable and/or the biogenic fractions, be reasonably fast and not too expensive in order to define the biomass content of SRFs.

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² Short C-cycle take a few years (one to a few hundreds of years) to close the loop (short term renewable resources)

1 Scope

This document considers the relative difference between the biodegradable fraction and the biogenic fraction of solid recovered fuels prepared from non-hazardous waste for energy recovery and whether there is a need to develop two sets of standards or only one set for the determination of these fractions in order to define the biomass content of SRFs.

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.

00343001³, *Solid recovered fuels – Terminology, definitions and descriptions*.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in 00343001³ apply.

4 Definitions on biodegradable, biogenic and biomass

4.1 Biodegradable

4.1.1 Preferred definition of biodegradable

(Material) capable of undergoing biological anaerobic or aerobic decomposition under conditions naturally occurring in the biosphere

NOTE This definition is in line with the Landfill Directive with the addition of a description of the environment for decomposition and clearly stating that it is to be a biological activity involved.

4.1.2 Other definitions on biodegradable

Definition of biodegradable in the directive 1999/31/EC *on the landfill of waste*:
(Material) capable of undergoing anaerobic or aerobic decomposition

NOTE Using the definition of the Landfill directive [3], the firing of coal in a power plant also meets the definition.

4.2 Biogenic

(Material) produced by living organisms in natural processes but not fossilised or derived from fossil resources

NOTE The term biogenic is used to denote CO₂-neutral material when degraded under aerobic conditions. Examples are: plants, wood waste, forestry residues

³ To be published.

4.3 Biomass

4.3.1 Preferred definition of biomass

Material of biological origin excluding material embedded in geological formation or transformed to fossil

NOTE This definition is very close to the definition in CEN/TC 335 *Solid Biofuels* [5] with the only difference that coal found on the surface of the Earth is clearly excluded. For further clarification definitions on fossil and geological formation:

Fossil

The remains or traces of a plant or animal life embedded in geological formation from a previous geological period and transformed to a stable material for the conditions of its present location

Geological formation

Material formed by consecutive natural depositions of different materials in a certain geological period

The present geological period, Quaternary Period, started approximately 1,64 million years ago. It is divided in the Pleistocene and the Holocene. Pleistocene ended approximately 10 000 years ago, and the Holocene, which is also called the Post-glacial period, continues.

4.3.2 Other definitions on Biomass

There are definitions on biomass to be found in CEN standard on Solid Biofuels and in several EU directives:

- Definition of biomass in CEN/TC 335 *Solid Biofuels – Terminology, definitions and descriptions* [5]:
Material of biological origin excluding material embedded in geological formations and transformed to fossil;
- Definition of biomass in the directive 2001/77/EC *on the promotion of electricity produced from renewable energy sources in the internal electricity market (RES-E)* [4]:
The biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste;
- Definition of biomass in the directive 2001/80/EC *on the limitation of emissions of certain pollutants into the air from large combustion plants* [6]:
Products consisting of any whole or part of a vegetable matter from agriculture or forestry which can be used as a fuel for the purpose of recovering its energy content and the following waste used as a fuel:
 - a) vegetable waste from agriculture and forestry;
 - b) vegetable waste from the food processing industry, if the heat generated is recovered;
 - c) fibrous vegetable waste from virgin pulp production and from production of paper from pulp, if it is co-incinerated at the place of production and the heat generated is recovered;
 - d) cork waste;
 - e) wood waste with the exception of wood waste which may contain halogenated organic compounds or heavy metals as a result of treatment with wood preservatives or coating, and which includes in particular such wood waste originating from construction and demolition waste.
- Definition of biomass in the Commission Decision of 29/01/2004 “Establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council” [7]: