SLOVENSKI STANDARD
SIST EN 16785-2:2018

01-junij-2018

Bioizdelki - Biodelež - 2. del: Ugotavljanje biodeleža z metodo materialne bilance

Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method

Biobasierte Produkte - Biobasierter Gehalt - Teil 2: Bestimmung des biobasierten Gehalts unter Verwendung der Materialbilanzmethode

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Produits biosourcés - Teneur biosourcée - Partie 2: Détermination de la teneur biosourcée à l'aide de la méthode basée sur le bilan matière

SIST EN 16785-2:2018
https://standards.iteh.ai/catalog/standards/sist/abdc2a75-cc95-410e-ac55-c1275484953b/sist-en-16785-2-2018

Ta slovenski standard je istoveten z: **EN 16785-2:2018**

ICS:

13.020.55	Biološki izdelki	Biobased products
71.040.40	Kemijska analiza	Chemical analysis

SIST EN 16785-2:2018 **en,fr,de**

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

SIST EN 16785-2:2018

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 16785-2:2018
https://standards.iteh.ai/catalog/standards/sist/abdc2a75-cc95-410e-ac55-c1275484953b/sist-en-16785-2-2018

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16785-2

March 2018

ICS 13.020.55; 71.040.40

English Version

Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method

Produits biosourcés - Teneur biosourcée - Partie 2 : Détermination de la teneur biosourcée à l'aide de la méthode basée sur le bilan-matières

Biobasierte Produkte - Biobasierter Gehalt - Teil 2: Bestimmung des biobasierten Gehalts unter Verwendung der Materialbilanzmethode

This European Standard was approved by CEN on 24 December 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

SIST EN 16785-2:2018
https://standards.iteh.ai/catalog/standards/sist/abcb2a75-ac05-410e-ae55-
1275d8495f3b/sist-en-16785-2-2018

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2018 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 16785-2:2018 E

SIST EN 16785-2:2018

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 16785-2:2018
https://standards.iteh.ai/catalog/standards/sist/abdc2a75-cc95-410e-ac55-c12754849536/sist-en-16785-2-2018

SIST EN 16785-2:2018

European foreword

This document (EN 16785-2:2018) has been prepared by Technical Committee CEN/TC 411 “Bio-based products”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2018, and conflicting national standards shall be withdrawn at the latest by September 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

EN 16785 consists of the following parts:

— EN 16785-1, *Bio-based products — Bio-based content — Part 1: Determination of the bio-based content using the radiocarbon analysis and elemental analysis*

— EN 16785-2, *Bio-based products — Bio-based content — Part 2: Determination of the bio-based content using the material balance method (the present document)*

iTeh STANDARD PREVIEW

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

(standards.iteh.ai)

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

SIST EN 16785-2:2018
https://standards.iteh.ai/catalog/standards/sist/abdc2a75-cc95-410e-ac55-c12754b4953b/sist-en-16785-2-2018

SIST EN 16785-2:2018

Introduction

Bio-based products from forestry and agriculture have a long history of application, such as paper, board and various chemicals and materials. The last decades have seen the emergence of new bio-based products in the market. Some of the reasons for the increased interest lie in the bio-based products' benefits in relation to the depletion of fossil resources and climate change. Bio-based products may also provide additional product functionalities. This has triggered a wave of innovation with the development of knowledge and technologies allowing new transformation processes and product development.

Acknowledging the need for common standards for bio-based products, the European Commission issued Mandate M/492 [1)], resulting in a series of standards developed by CEN/TC 411, with a focus on bio-based products other than food, feed and biomass for energy applications.

The standards of CEN/TC 411 "Bio-based products" provide a common basis on the following aspects:

— Common terminology;

— Bio-based content determination;

— Life Cycle Assessment (LCA);

— Sustainability aspects;

— Declaration tools.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

It is important to understand what the term bio-based product covers and how it is being used. The term 'bio-based' means 'derived from biomass'. Bio-based products (bottles, insulation materials, wood and wood products, paper, solvents, chemical intermediates, composite materials, etc.) are products which are wholly or partly derived from biomass. It is essential to characterize the amount of biomass contained in the product by, for instance, its bio-based content or bio-based carbon content.

The bio-based content of a product does not provide information on its environmental impact or sustainability, which may be assessed through LCA and sustainability criteria. In addition, transparent and unambiguous communication within bio-based value chains is facilitated by a harmonized framework for certification and declaration.

The purpose of this European Standard is to provide a method for the determination of the bio-based content of solid, liquid and gaseous products, based on the accounting of materials entering and leaving the system and on traceability of the materials during processing, to ensure the physical presence of the bio-based material in the output.

Although it is not the purpose of this method, the claimed bio-based content of the output could be validated by analysis using EN 16785-1 [1].

1) A mandate is a standardization task embedded in European trade laws. Mandate M/492 is addressed to the European Standardization bodies, CEN, CENELEC and ETSI, for the development of horizontal European Standards for bio-based products.

SIST EN 16785-2:2018

1 Scope

This part of EN 16785 specifies a method of determining the bio-based content in products using the material balance applied to a representative product batch in a production unit.

This European Standard is applicable to any solid, liquid and gaseous bio-based product containing carbon, obtained by chemical synthesis, mixing or assembling, provided that:

— for a product batch, the composition of the product and the bio-based content of each input, output and loss in the production unit are known; and

— the bio-based content of the product is verifiable by analysis.

This method incorporates only the physical parts of the input and output stream as present in the final product, and does not incorporate material inputs for the energy to be used during the production process.

This method is not needed for the determination of the bio-based content in natural products wholly derived from biomass.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

EN 16575, *Bio-based products - Vocabulary*

SIST EN 16785-2:2018
https://standards.iteh.ai/catalog/standards/sist/abdc2a75-cc95-410e-ac55-c1275484953b/sist-en-16785-2-2018

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16575 and the following apply.

3.1
material balance
comparison of physical quantities, expressed by mass, of inputs and outputs for a product in the manufacturing process of this product, over a specified time period

3.2
product batch
identified collection of products, manufactured consecutively or continuously under the same conditions, using the same materials conforming to the same specification

Note 1 to entry: The product batch is defined and identified by the product manufacturer.

3.3
representative product batch
product batch assumed to have the same characteristics as the production sampled when the latter is considered as a homogeneous whole

SIST EN 16785-2:2018

4 Principle

For a defined product batch manufactured in a defined production unit, this method, supported by rules described in Clause 6, consists of:

a) the quantification of the inputs, by dry mass, of the materials used for producing the bio-based product under consideration;

b) the quantification of the losses, by dry mass, in the production unit, for each lost material, if any;

c) the quantification of the output(s), by dry mass, and

d) the calculation of the bio-based content from these data.

The traceability system of the production unit provides necessary information and data to perform the calculations.

This method requires that the bio-based content of each input and lost material for the defined product batch in the production unit is known.

5 Natural products

It is not needed to apply this method for the determination of the bio-based content in natural products wholly derived from biomass [e.g. wood (including pulp), flax, hemp, bamboo, sisal, coconut, rice].

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The bio-based content of a natural product or constituent of a product is equal to 100 %.

6 Rules for allocation of elements

SIST EN 16785-2:2018
https://standards.iteh.ai/catalog/standards/sist/abdc2a75-cc95-410e-ac55-c1275484953b/sist-en-16785-2-2018

For a product or constituent of a product obtained by chemical synthesis, the following rule shall be applied:

a) if the reactants are exclusively derived from biomass, the bio-based content of the product or constituent of the product is 100 %;

b) if none of the reactants is derived from biomass, the bio-based content of the product or constituent of the product is 0 %, and

c) if the reactants are derived from both biomass and non-biomass, the following convention applies:

   If oxygen (O) and/or hydrogen (H) and/or nitrogen (N) element(s) is(are) bound to a carbon structure derived from biomass, its(their) fraction shall be considered to be part(s) of the bio-based content.

NOTE 1 According to the current state of the art, it is not possible by isotopic measurements to establish a distinction between elements originating from biomass and elements originating from non-biomass, for elements such as oxygen, hydrogen or nitrogen.

NOTE 2 Element(s) other than C, H, O and N are not considered in this European Standard.

SIST EN 16785-2:2018

7 Procedure

7.1 Information and data to be provided for calculation

Information and data to be provided with the product under consideration shall include:

a) information related to the relevant chemical reaction(s), if any, and the composition of the product: raw material/chemicals/intermediate from which the product is made;

b) information related to the production unit (description of the process) and the product batch from which the product under consideration belongs to;

c) the dry mass ($M_{in,i}$) and bio-based content ($m_{B,in,i}$) of each input (see 7.2); and

d) the dry mass ($M_{lo,i}$) and bio-based content ($m_{B,lo,i}$) of each lost material during processing (see 7.2).

The bio-based content of each input ($m_{B,in,i}$) shall take into account the deviations which can exist. It may be obtained by calculation or determined according to a relevant method (e.g. EN 16785-1 [1]), in accordance with the rules of allocations of elements defined in Clause 6.

The bio-based content of each lost material ($m_{B,lo,j}$) shall take into account the deviations which can exist in the manufacturing process. It may be obtained by calculation or determined according to a relevant method (e.g. EN 16785-1 [1]), in accordance with the rules of allocations of elements defined in Clause 5.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

If an input is a natural product, then its bio-based content is equal to 100 % (see Clause 6).

If data related to any bio-based content of an input is missing or not validated, it shall be stated as zero.

SIST EN 16785-2:2018
https://standards.iteh.ai/catalog/standards/sist/4ed...-c1275484953b/sist-en-16785-2-2018

Only the elements C, H, O and N are taken into account for the determination of the bio-based content of the each input, output and loss.

NOTE If other elements are present in the product, the method described in EN 16785-1, used for the validation of the calculated bio-based content obtained by applying this part of EN 16785 (see Clause 9), does not take into account these other elements. Only verifiable bio-based content can be declared.

7.2 Calculation of the bio-based content

Within a defined time period corresponding to a representative product batch, establish the material balances for the product under consideration by using Formulae (1) and (2).

$$\sum M_{in,i} = \sum M_{lo,k} + M_{t,out} \quad (1)$$

$$\sum M_{in,i} \times m_{B,\,in,\,i} = \sum M_{lo,j} \times m_{B,lo,j} + M_{B,\,out} \quad (2)$$

Calculate the bio-based content, expressed as a percentage, of the product under consideration, for a representative product batch, by using Formula (3).

$$m_B = 100 \cdot \frac{M_{B,out}}{M_{t,\,out}} = 100 \cdot \frac{\sum M_{in,i} \times m_{B,\,in,\,i} - \sum M_{lo,j} \times m_{B,lo,j}}{\sum M_{in,i} - \sum M_{lo,j}} \quad (3)$$