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STN	**Výrobky založené na biomase Obsah založený na biomase Stanovenie obsahu uhlíka založeného na biomase s použitím rádiouhlíkovej metódy**	**STN EN 16640** 65 9812

Bio-based products - Bio-based carbon content - Determination of the bio-based carbon content using the radiocarbon method

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Supersedes CEN/TS 16640:2014

English Version

Bio-based products - Bio-based carbon content - Determination of the bio-based carbon content using the radiocarbon method

Produits biosourcés - Teneur en carbone biosourcé - Détermination de la teneur en carbone biosourcé par la méthode au radiocarbone

Biobasierte Produkte - Gehalt an biobasiertem Kohlenstoff - Bestimmung des Gehalts an biobasiertem Kohlenstoff mittels Radiokarbonmethode

This European Standard was approved by CEN on 4 December 2016.

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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.

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European foreword

This document (EN 16640:2017) 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of an identical text or by endorsement, at the latest by August 2017, and conflicting national standards shall be withdrawn at the latest by August 2017.

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.

This document supersedes CEN/TS 16640:2014.

This document has been prepared under Mandate M/492 “Mandate addressed to CEN, CENELEC and ETSI for the development of horizontal European Standards and other standardization deliverables for bio-based products”.

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.

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.

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.

This European Standard has been developed with the aim to specify the method for the determination of bio-based carbon content in bio-based products using the ^{14}C method. This method using the ^{14}C method is based on the analytical test methods used for the determination of the age of objects containing carbon.

This European Standard provides the reference test methods for laboratories, producers, suppliers and purchasers of bio-based product materials and products. It may be also useful for authorities and inspection organizations.

Part of the research leading to this document has been performed under the European Union Seventh Framework Programme (see http://www.biobasedeconomy.eu/research/kbbpps/).This document is based on EN 15440 [1] prepared by CEN/TC 343, "Solid recovered fuels", EN ISO 13833 [2], prepared by ISO/TC 146 "Air quality" and CEN/TC 264 "Air quality", and CEN/TS 16137 [3], prepared by CEN/TC 249, "Plastics".

The analytical test methods specified in this European Standard are compatible with those described in ASTM D 6866-12 [4].

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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.

1 Scope

This European Standard specifies a method for the determination of the bio-based carbon content in products, based on the ^{14}C content measurement.

This European Standard also specifies two test methods to be used for the determination of the ^{14}C content from which the bio-based carbon content is calculated:

— Method A: Liquid scintillation-counter method (LSC) ;

— Method B: Accelerator mass spectrometry (AMS).

A third method, Method C: Beta ionization (BI) can also be used for the determination of the ^{14}C content and is described in Annex D (informative)

The bio-based carbon content is expressed by a fraction of sample mass or as a fraction of the total carbon content. This calculation method is applicable to any product containing carbon, including bio composites.

NOTE This European Standard does not provide the methodology for the calculation of the biomass content of a sample see prEN 16785–1 [5] and prEN 16785–2 [6].

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.

EN 15400, *Solid recovered fuels - Determination of calorific value*

EN ISO 1716, *Reaction to fire tests for products - Determination of the gross heat of combustion (calorific value) (ISO 1716)*

ISO 1928, *Solid mineral fuels — Determination of gross calorific value by the bomb calorimetric method and calculation of net calorific value*