

<b>STN</b>	<b>Trvanlivosť dreva a výrobkov na báze dreva. Obsah celkového organického uhlíka (TOC) v dreve a výrobkoch na báze dreva.</b>	<b>STN EN 16718</b>  49 0672
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Wood and wood based products - Dosage of the total organic carbon (TOC) in wood and wood based products

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

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/16

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Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, 2016  
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy  
rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

EUROPEAN STANDARD

**EN 16718**

NORME EUROPÉENNE

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English Version

## Wood and wood based products - Dosage of the total organic carbon (TOC) in wood and wood based products

Produits de préservation du bois et matériaux à base de bois - Dosage du carbone organique total (COT) dans les bois et matériaux à base de bois

Holz und Holzprodukte - Bestimmung des gesamten organischen Kohlenstoffs (TOC) in Holz und Holzprodukten

This European Standard was approved by CEN on 12 September 2015.

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## **European foreword**

This document (EN 16718:2015) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and wood-based products”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

Bio-based products from forestry and agriculture have a long history of application. The last decades have seen the emergence of new bio-based products in the market. Acknowledging the need for common standards for bio-based products, the European Commission issued mandate M/492, resulting in a series of standards developed by CEN/TC 411.

For business to business transactions, claims which are relevant to describe characteristics of bio-based products in a business to business environment will be given in the near future. Data are by consequence required to generate and transfer information in the industrial chain and/or as an input for product specific standards and certification schemes.

The work to be done by the CEN/TC 411/WG 3 concerns the determination of the bio-based carbon in order to determine the level of bio-based content of a product or materials. A document (CEN/TR 16721) has been prepared by Technical Committee CEN/TC 411 "Bio-based products", and describes a list of methods and an "overview of methods to determine the bio-based content and related methods" for Bio-based products.

As part of the task force of CEN/TC 175, devoted to carbon foot printing and LCA, a European Standard was published on the simplified calculation of the amount of biomass carbon stored in wood (using 50 % of the anhydrous wood mass): EN 16449.

This standard EN 16718 describes the methods based on analytical measurements. These methods can be considered as complementary to the radiocarbon based method and methods based on evaluation by calculation (mass balance approaches). One of these analytical methods is a method based on measurement of stable isotopic ratio present in biomass in order to determine the biomass content of the product.

The development of this method described in this report is ongoing with close collaboration between FCBA and the "Institut des Sciences Analytiques" CNRS in order to determine the bio-based content of wood raw materials, glues and panels made with these raw materials for end use manufactured products with this new method. The objective is to propose correlated analysis (with the TOC method proposed by FCBA) to determine the carbon content to purpose a quick and low cost method easy to handle.

References:

- <http://www.biobasedeconomy.eu/standardisation/cen-tc411/>
- [http://www2.afnor.org/espace\\_normalisation/structure.aspx?commid=86489](http://www2.afnor.org/espace_normalisation/structure.aspx?commid=86489)

The tests that have resulted in the specification of this document were performed in the context of work conducted by the FCBA [timber certification body] Technological Institute aimed at determining a method for supplying data on organic carbon contents that could be used to calculate carbon balances.

The storage of biomass carbon in wood-based products is the preservation of the carbon absorbed by the tree from atmospheric CO<sub>2</sub> through photosynthesis.

The carbon thus captured in the material is of benefit to the climate throughout the lifespan of the product, which can be several dozen years for a construction product, for example. The French Standard NF P01-010 (2004), which lays out the format of environmental and health statements (FDES) for construction products, provides the option of indicating the following supplementary information, in addition to the "Climate change" indicator, which is calculated from the flows of greenhouse gases associated with the product life cycle: "for some construction products (e.g. plant-based products), CO<sub>2</sub> storage during the "service life" stage can be given if measurements are taken based on standardized test methods."

Furthermore, the Guide to Best Practices on environmental labelling of mass-market consumer products (BP X30-323) includes in Annex G: “Carbon accounting integrating time lag” which also requires knowledge of the biomass carbon contents of the products.

The purpose of this document is therefore to propose a laboratory measurement method of the amount of biomass carbon that will provide values of carbon or CO<sub>2</sub> equivalent stored in wood-based products, with the aim to integrate this information in the environmental statements of these products according to the texts referenced above.

While measurement is not systematically necessary for solid wood products, for example, given the common knowledge on the densities of the various wood species and on the proportion of carbon contained in wood, this experimental measurement may prove to be necessary for products made of wood-based composite materials.

The organic carbon contained in wood and wood-based materials is found in several different forms. Cumulative measurements, such as total organic carbon (TOC), need to be used. Isotopic ratio enables the differentiation between synthetic and natural products. IRMS (Isotope Ratio Mass Spectrometer) is a complementary method to the TOC method by an identification of the isotope <sup>13</sup>C: both techniques are necessary to give reliable data on a bio-based content on a wood based material such as panel, board, and woods containing chemicals in general. A study is currently in progress in France on wood based materials: the results will enable to improve this present document and to give data with multi-isotopic determinations (<sup>13</sup>C, <sup>15</sup>N, <sup>2</sup>H, <sup>18</sup>O).

## 1 Scope

This European Standard describes a method for determining total organic carbon by calculating the difference between the results of measurements of total carbon (TC) and total inorganic carbon (TIC). The identification of the bio-based content given by the stable isotopes such as  $^{13}\text{C}$  is described also.

This method is applicable to all wood species, wood-based materials (panels, plywood, wood-polymer, etc.) and woods containing chemicals in general.

## 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 13183-1, *Moisture content of a piece of sawn timber — Part 1: Determination by oven dry method*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**