

<b>STN</b>	<b>Výrobky založené na biomase Posudzovanie životného cyklu Dodatočné požiadavky a návody na porovnanie životných cyklov výrobkov založených na biomase s ich ekvivalentmi na báze fosílnych palív</b>	<b>STN EN 18027</b>  65 9815
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Bio-based products - Life cycle assessment - Additional requirements and guidelines for comparing the life cycles of bio-based products with their fossil-based equivalents

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. 06/25

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EUROPEAN STANDARD

**EN 18027**

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English Version

## Bio-based products - Life cycle assessment - Additional requirements and guidelines for comparing the life cycles of bio-based products with their fossil-based equivalents

Produits biosourcés - Analyse du cycle de vie - Exigences et lignes directrices supplémentaires concernant la comparaison des cycles de vie de produits biosourcés avec leurs équivalents d'origine fossile

Biobasierte Produkte - Ökobilanzen - Zusätzliche Anforderungen und Leitlinien für den Vergleich der Lebenszyklen von biobasierten Produkten mit ihren fossilen Pendanten

This European Standard was approved by CEN on 17 February 2025.

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.

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 COMMITTEE FOR STANDARDIZATION  
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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**EN 18027:2025 (E)****European foreword**

This document (EN 18027:2025) has been prepared by Technical Committee CEN/TC 411 “Bio-based products”, the secretariat of which is held by SIS.

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 October 2025, and conflicting national standards shall be withdrawn at the latest by October 2025.

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 is complementary to EN 16760:2015 *Bio-based products – Life cycle assessment*.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye 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 benefits of bio-based products in relation to the depletion of fossil resources and climate change. Bio-based products can also provide additional product functionalities. These developments have 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<sup>1</sup>, resulting in a series of standards developed by CEN/TC 411 during 2012-2017, with a focus on bio-based products other than food, feed and biomass for energy applications. This document was developed after the expiration of the mandate, upon the initiative of CEN/TC 411/WG 4.

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; and
- 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 can 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 document has been developed with the aim to set a framework for fair comparisons between fossil-based and bio-based product systems through LCA. Today, some comparisons have been made in a way which (consciously or unconsciously) disadvantages the bio-based product systems related to a number of aspects. Often, this is due to an incorrect application of LCA, and not being in full conformance with the international LCA standard EN ISO 14044. In this document some of these issues are addressed when setting the framework for how a correct study is to be performed.

The general methodology to perform LCAs of products is described in the standard mentioned above as well as in EN ISO 14040, EN ISO 14067 and, more specific for bio-based products, in EN 16760 and EN ISO 22526-1 to EN ISO 22526-3 and ISO 22526-4. However, significant problems often arise when it comes to making well-balanced comparative LCAs between bio-based and fossil-based product systems. This document provides additional requirements and guidelines to enable practitioners to perform comparative LCA studies involving bio-based products with equivalent fossil-based products and to disclose the results. Fossil resource use increases the total amount of carbon in the biosphere while bio-

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

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based systems can operate in a renewable way within this system (where harvesting and growth rates are in balance). When biomass grows, the plant captures carbon dioxide (CO<sub>2</sub>) from air or water. This CO<sub>2</sub> can either be stored as products or in soil, or released when the biomass decays or burns (at the end of life).

This document sets requirements for comparisons between fossil-based and bio-based product systems. There can in some cases be many other options (which can be better than both the fossil-based and bio-based option), but this is outside of the scope of this document.

## 1 Scope

This document provides requirements and guidelines for comparing the life cycles of bio-based products with their fossil-based equivalents.

NOTE The term “equivalents” generally refers to the “functional equivalence”.

This document builds on existing LCA methodology and provides requirements and guidance on specific topics relevant for making well-balanced comparisons.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN ISO 14025:2010, *Environmental labels and declarations — Type III environmental declarations — Principles and procedures (ISO 14025:2006)*

EN ISO 14040:2006,<sup>2</sup> *Environmental management — Life cycle assessment — Principles and framework (ISO 14040:2006)*

EN ISO 14044:2006,<sup>3</sup> *Environmental management — Life cycle assessment — Requirements and guidelines (ISO 14044:2006)*

EN ISO 14067:2018, *Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification (ISO 14067:2018)*

EN 16575:2014, *Bio-based products — Vocabulary*

EN 16760:2015, *Bio-based products — Life Cycle Assessment*

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

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<sup>2</sup> As impacted by EN ISO 14040:2006/A1:2020.

<sup>3</sup> As impacted by EN ISO 14044:2006/A1:2018 and EN ISO 14044:2006/A2:2020.