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Bio-based products — Vocabulary

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Bio-based products - Vocabulary

Produits biosourcés - Vocabulaire

Biobasierte Produkte - Terminologie

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Foreword

This document (EN 16575:2014) 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of an identical text or by endorsement, at the latest by February 2015 and conflicting national standards shall be withdrawn at the latest by February 2015.

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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 cover the horizontal definitions for bio-based products. Hence, other terms and definitions are given in the other standards developed by CEN/TC 411 "Bio-based products".

For food, feed and energy applications other definitions may exist in other product specific standards.

1) A Mandate is a standardization task embedded in European trade laws. M/492 Mandate 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 defines general terms to be used in the field of bio-based products, including horizontal aspects relevant for bio-based product standards.

NOTE Though the terms in this standard are horizontally applicable to bio-based products, this standard focuses on areas other than food, feed and energy applications, where terms may be defined in existing specific standards.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
bio-based
derived from biomass

Note 1 to entry: Biomass can have undergone physical, chemical or biological treatment(s).

Note 2 to entry: The correct spelling of "bio-based" is with a hyphen (-). It is however in common usage sometimes spelt without a hyphen.

Note 3 to entry: The methods to determine and communicate "bio-based" as a characteristic are detailed in specific standards of CEN/TC 411.

2.2
bio-based carbon
biogenic carbon
carbon derived from biomass

Note 1 to entry: Biogenic carbon is defined in ISO/TS 14067:2013 [14], by the same definition.

2.3
bio-based carbon content
fraction of carbon derived from biomass in a product

Note 1 to entry: There are several approaches to express the bio-based carbon content. These include as a percentage of: the mass; the total carbon content, or the total organic carbon content of the sample. These are detailed in the relevant standards of CEN/TC 411.

2.4
bio-based content
fraction of a product that is derived from biomass

Note 1 to entry: Normally expressed as a percentage of the total mass of the product.

Note 2 to entry: For the methodology to determine the bio-based content, see FprCEN/TR 16721.

2.5
bio-based product
product wholly or partly derived from biomass

Note 1 to entry: The bio-based product is normally characterised by the bio-based carbon content or the bio-based content. For the determination and declaration of the bio-based content and the bio-based carbon content, see the relevant standards of CEN/TC 411.

Note 2 to entry: Product can be an intermediate, material, semifinished or final product.

Note 3 to entry: "bio-based product" is often used to refer to a product which is partly bio-based. In those cases the claim should be accompanied by a quantification of the bio-based content.

2.6
biodegradation
degradation caused by biological activity, e.g. by enzymatic action, leading to a significant change in the chemical structure of a product

[SOURCE: Adapted from EN ISO 472:2013 [3]]

2.7
biomass
material of biological origin excluding material embedded in geological formations and/or fossilized

EXAMPLES (whole or parts of) plants, trees, algae, marine organisms, micro-organisms, animals, etc.

2.8
biomass content
see bio-based content (2.4)

2.9
co-product
any of two or more products coming from the same unit process or product system

[SOURCE: EN ISO 14040:2006 [2]]

2.10
degradation
irreversible process leading to a significant change in the structure of a product, typically characterized by a change of properties (e.g. integrity, molecular mass or structure, mechanical strength) and/or by fragmentation, affected by environmental conditions, proceeding over a period of time and comprising one or more steps

[SOURCE: Adapted from EN ISO 472:2013 [3]]

2.11
durability
ability of a product to retain the values of its properties under specified conditions

[SOURCE: Adapted from IUPAC 2012 [4]]

2.12
life cycle assessment
LCA
compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle

[SOURCE: EN ISO 14040:2006 [2]]

2.13
mass balance
relationship between input and output of a specific substance within a system in which the output from the system cannot exceed the input into the system

[SOURCE: Adapted from ISO 6107-3:1993 [11] and EN 16214-1:2012 [9]]

2.14
product
substance, mixture of substances, material or object resulting from a production process

Note 1 to entry: Product can be an intermediate, material, semifinished or final product.

2.15
renewable material
material that is composed of biomass and that can be continually replenished

[SOURCE: Adapted from EN ISO 14021:2001 [5]]

2.16
sustainable development
development that meets the needs of the present without compromising the ability of future generations to meet their own needs

Note 1 to entry: Sustainable development is about integrating the goals of a high quality of life, health and prosperity with social justice and maintaining the earth's capacity to support life in all its diversity. These social, economic and environmental goals are interdependent and mutually reinforcing. Sustainable development can be treated as a way of expressing the broader expectations of society as a whole.

[SOURCE: ISO 26000:2010 [6]]

2.17
total carbon
TC
quantity of carbon present in a product in the form of organic, inorganic and elemental carbon

[SOURCE: Adapted from CEN/TS 16295:2012 [7], EN 13137:2001 [8]]

2.18
total organic carbon
TOC
quantity of organic carbon present in a product

Note 1 to entry: Total organic carbon is often determined as the carbon that is converted into carbon dioxide by combustion and which is not liberated as carbon dioxide by acid treatment.

2.19
waste
any substance, mixture of substances, material or object which the holder discards or intends or is required to discard

[SOURCE: Adapted from EN 16214-1:2012 [9] and Waste Framework Directive (2008/98/EC) Article 3:1 [10], and EN ISO 14040:2006 [2]]

Annex A
(informative)

Use of terms "bio-based product", "bio-based" and prefix "bio"

A.1 Bio-based products

The definition of a “bio-based product” (2.5) establishes a direct link between the biomass (2.7) and the product (2.14). In reality, intermediate step(s) are necessary to obtain a “bio-based product” from the “biomass”.

After harvesting or collecting, the biomass can be used as raw material in various processes and products. Biomass can be processed physically, mechanically, chemically or biologically, resulting in bio-based materials or substances, which may be processed with or without materials or substances of other origins (e.g. fossil, mineral) resulting in bio-based products (i.e. wholly or partly derived from biomass).

During the production of bio-based products, the biomass can undergo different degrees of transformation, resulting in more or less complex bio-based products, such as:

- materials resulting from simple physical or mechanical processes, such as sawn timber, hemp fibres used as insulation product;

- materials resulting from fractionation and/or extraction, such as cellulose pulp, starch, vegetable oils;

- intermediates from chemical, physical, biological processes such as ethanol used for biofuels, chemical building blocks, monomers;

- semi-finished products or finished products, such as bio-lubricants, biosurfactants, biosolvents, biocomposites, biochemicals, biopolymers.

More information is given in documents as listed in CEN/TR 15932:2010 [12] and CEN/TR 16227:2011[13].

A.2 "Bio" and "bio-based"

The prefix "bio" frequently appears in everyday language in terms such as "bioproduct" (where "product" can be substituted by e.g. lubricant), mainly as marketing tools. Detergents and plastic products are other examples of the widespread use of the “bio” prefix. Without reference to clear and agreed definitions, there are many unsubstantiated claims, which can be deceptive.

The term “biomass-based” or "bio-based" refers to the origin of the raw material. The prefix "bio" can refer to different functionalities (biodegradable, biocompatible, etc.) or processing (biological or biotechnological processes). To ensure transparent and non-misleading information to consumers, the prefix "bio" should be substituted by more accurate and more informative equivalents and should refer to a European or International Standard.

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[5] EN ISO 14021:2001, *Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling) (ISO 14021:1999)*

[6] ISO 26000:2010, *Guidance on social responsibility*

[7] CEN/TS 16295:2012, *Plastics - Declaration of the bio-based carbon content*

[8] EN 13137:2001, *Characterization of waste - Determination of total organic carbon (TOC) in waste, sludges and sediments*

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[10] *Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain directives EU Waste Directive*

[11] ISO 6107-3:1993, *Water quality — Vocabulary — Part 3*

[12] CEN/TR 15932:2010, *Plastics - Recommendation for terminology and characterisation of biopolymers and bioplastics*

[13] CEN/TR 16227:2011 *Liquid petroleum products - Bio-lubricants - Recommendation for terminology and characterisation of bio-lubricants and bio-based lubricants*

[14] ISO/TS 14067:2013, *Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification and communication*

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