



SLOVENSKI STANDARD

oSIST prEN 17035:2018

01-oktober-2018

Površinsko aktivne snovi - Površinsko aktivne snovi na biološki osnovi - Zahteve in preskusne metode

Surface Active Agents - Bio-based surfactants - Requirements and test methods

Grenzflächenaktive Stoffe - Bio-basierte Tenside - Anforderungen und Prüfverfahren

Agents de surface □ Tensioactifs biosourcés □ Exigences et méthodes d'essais

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Ta slovenski standard je istoveten z: **prEN 17035**

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ICS:

13.020.55	Biološki izdelki	Biobased products
71.100.40	Površinsko aktivna sredstva	Surface active agents

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en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 17035

August 2018

ICS 71.100.40

Will supersede CEN/TS 17035:2017

English Version

Surface Active Agents - Bio-based surfactants - Requirements and test methods

Agents de surface - Tensioactifs biosourcés - Exigences
et méthodes d'essais

Grenzflächenaktive Stoffe - Bio-basierte Tenside -
Anforderungen und Prüfverfahren

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 276.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 17035:2018) has been prepared by Technical Committee CEN/TC 276 “Surface active agents”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede CEN/TS 17035:2017.

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

This document has been prepared under Mandate M/491 [12] of the European Commission, addressed to CEN for the development of European Standards for solvents and surfactants in relation to bio-based product aspects. It has been prepared by CEN/TC 276/WG 3 “Bio-surfactants”, the secretariat of which is held by AFNOR.

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Introduction

Bio-based raw materials have been used for millennia in the manufacture of surfactants, e.g. the first surfactant used by mankind, was already completely bio-based – soap. With the advent of modern surfactants in the early 20th Century, petrochemical-based raw materials also became of interest. They offered the opportunity to tune the surfactant properties, in a broader sense, to their various applications.

The last decades have seen the emergence of new bio-based raw materials for surfactants. Some of the reasons for the increased interest lie in the bio-based products' potential benefits in relation to the depletion of fossil resources and climate change.

Acknowledging the need for common standards for bio-based products, the European Commission issued Mandate M/492¹⁾, 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 terminology²⁾;
- bio-based content determination;
- Life Cycle Assessment (LCA)³⁾;
- sustainability aspects⁴⁾;
- declaration tools.

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It is important to understand what the term “bio-based product” covers and how it is being used. The term “bio-based” means “derived wholly or partly from biomass”. It is essential to characterize the amount of biomass contained in the product by, for instance, its (total) bio-based content or bio-based carbon content.

The bio-based content of a product itself does not provide information on its environmental impact or sustainability, which may be assessed through Life Cycle Inventory (LCI), 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.

Breaking down the horizontal standards to bio-based products like bio-based surfactants, the European Commission issued Mandate M/491 [12], resulting in standards developed by CEN/TC 276. This European Standard has been developed with the aim to fulfil part of the Mandate to describe the technical requirements of bio-based surfactants. The criteria for “bio-based surfactants” published in this European Standard are complementary to the horizontal standards by CEN/TC 411.

1) A mandate is a standardization task embedded in European trade laws. The M/492 Mandate is addressed to the European Standardization bodies, i.e. CEN, CENELEC and ETSI, for the development of horizontal European Standards for bio-based products. The M/491 Mandate is addressed to the development of European Standards for bio-solvents and bio-surfactants.

2) EN 16575.

3) EN 16760.

4) EN 16751.

Surfactants are products which have the ability to reduce interfacial/surface tension, wet surfaces, suspend materials or emulsify oils and fats. In Europe, thousands of producers, manufacturers and nearly every inhabitant use surfactants every day in consumer or industrial applications. The surfactant-producing industry is composed of mainly multinationals. Downstream users are found in multinationals as well as SME's.

Surfactants may be produced from both fossil and renewable carbon feedstock (ref. EN 16575 - vocabulary). The amount of crude oil used for surfactant production is, however, low with less than 1 % of the total world's crude oil consumption.

Finally, the approach for these Technical Reports/Specifications/Standards intends to strengthen and harmonize the reputation of "bio-based surfactants" and the confidence of the customer in this product group.

An overview and considerations for the compilation of this European Standard can be found in the WI 276071 [1]. It will describe existing raw material sources with regard to their current usage in surface active agents, their source identification and conformation, and the options for communication same. It should also include the current work on surfactants regarding their performances, their sustainability, the LCA approaches and end of life options.

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prEN 17035:2018 (E)**1 Scope**

This European Standard sets requirements for bio-based surfactants in terms of properties, limits, application classes and test methods. It lays down the characteristics and details for assessment of bio-based surfactants as to whether they:

- are fit for purpose in terms of performance related properties;
- comply with the requirements regarding the health, safety and environment which apply to general surfactants;
- are derived from a certain minimum percentage of biomass; and
- comply with at least similar sustainability criteria as comparable (non-bio-based) surfactants.

The criteria of the regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) [11] also apply to bio-based surfactants.

NOTE EN 16575 defines the term “bio-based” as derived from biomass and clarifies that “bio-based” does not imply “biodegradable”. In addition, “biodegradable” does not necessarily imply the use of “bio-based” material.

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 1772, *Surface active agents — Determination of wetting power by immersion (ISO 8022:1990 modified)*

[kSIST FprEN 17035:2020](https://standards.iteh.ai/catalog/standards/sist/2404dbb7-adc5-4768-80fc-714f81170120/en-1772-2020)

[https://standards.iteh.ai/catalog/standards/sist/2404dbb7-adc5-4768-80fc-](https://standards.iteh.ai/catalog/standards/sist/2404dbb7-adc5-4768-80fc-714f81170120/en-1772-2020)

EN 1890, *Surface active agents — Determination of cloud point of non-ionic surface active agents obtained by condensation of ethylene oxide*

EN 12458, *Surface active agents — Determination of stability in hard water*

EN 12728, *Surface active agents — Determination of foaming power — Perforated disc beating method*

EN 13996, *Surface active agents — Foaming power and antifoaming power — Turbine stirring method*

EN 14210, *Surface active agents — Determination of interfacial tension of solutions of surface active agents by the stirrup or ring method*

EN 14370, *Surface active agents — Determination of surface tension*

EN 14371, *Surface active agents — Determination of foamability and degree of foamability — Circulation test method*

EN 16640, *Bio-based products — Bio-based carbon content — Determination of the bio-based carbon content using the radiocarbon method*

EN 16575, *Bio-based products — Vocabulary*

EN 16751, *Bio-based products — Sustainability criteria*

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

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*

EN ISO 14040, *Environmental management — Life cycle assessment — Principles and framework (ISO 14040)*

EN ISO 14044, *Environmental management — Life cycle assessment — Requirements and guidelines (ISO 14044)*

DIN 53902, *Testing of surface active agents; determination of foaming power, modified Ross-Miles-method*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 surfactant

organic substance possessing surface activity which, dissolved in a liquid, particularly water, lowers the surface or interfacial tension, by preferred adsorption at the liquid/vapour surface, or other interfaces

Note 1 to entry: “Substance” as defined in REACH [12]
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[SOURCE: EN ISO 862:1995, Definition 1, modified — The term originally defined was “surface active agent” and “a chemical compound” is replaced here with “organic substance” at the beginning of the definition.]

3.2 bio-based surfactant

surfactant wholly or partly derived from biomass (based on biogenic carbon)

3.3 bio-surfactant

surfactant wholly based on biomass (based on biogenic carbon) produced either by chemical or biotechnological processing

3.4 degradation

transformation of a compound into smaller component parts due to the physico-chemical processes, which can occur due to abiotic processes such as oxidation and UV adsorption

3.5 biodegradation

transformation of a compound into smaller component parts by means of biological processes

prEN 17035:2018 (E)**3.6****ultimate biodegradation**

breakdown of organic matter by micro-organisms in the presence of oxygen to carbon dioxide, water and mineral salts of any other elements present (mineralization) or in absence of oxygen to carbon dioxide, methane and mineral salts, and in both cases the production of new biomass

4 Generalities on surfactants

Surfactants are products which have the ability to reduce interfacial/surface tension, wet surfaces, suspend materials, or emulsify oils and fats. They make it possible to process, apply, clean or separate materials. Surfactants are widely used in consumer and professional products and for industrial applications. Surfactants are typically used on their own or in combination with other surfactants and other agents to fulfil the requirements of the respective applications.

Examples of applications for surfactants are:

- cleaning agent;
- foaming/defoaming agent;
- wetting agent;
- emulsifier;
- viscosity modifier;
- surface tension reducer;
- process aid;
- fabric softener.

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NOTE For many applications to perform effectively, surfactants are essential (see for examples the website of the TEGEWA e.V. (TExtilhilfsmittel) (textile auxiliaries), “GERbstoffe” (tanning agents) and “WAschrohstoffe” (detergent raw materials))⁵⁾.

5 Performance of surfactants**5.1 Generalities related to performance**

Performance and properties of any molecule, including surfactants, is determined by its chemical structure and not by the origin of its raw materials.

This section gives a common set of technical properties characterizing the performance of surfactants including bio-based surfactants. Due to the absence of international surfactant specification standards, it is necessary to provide to potential users the means to qualify the bio-based surfactant products, especially for its technical performance. Additionally, there are a number of other factors which will determine the acceptance of a surfactant such as the Health, Safety and Environmental properties which are treated in another section of this document.

Surfactants are used in such a wide variety of applications that it is not convenient to evaluate separately their performance with respect to each application. Therefore, a practical approach is to

5) See www.tegewa.de for a more detailed brochure about typical use of surfactants.