SLOVENSKI STANDARD
SIST-TS CEN/TS 17035:2018

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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 - Agents tensioactifs biosourcés - Exigences et méthodes d'essais

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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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TECHNICAL SPECIFICATION

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CEN/TS 17035

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English Version

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

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

Grenzflächenaktive Stoffe - Biobasierte Tenside - Anforderungen und Prüfverfahren

This Technical Specification (CEN/TS) was approved by CEN on 11 December 2016 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

European foreword

This document (CEN/TS 17035:2017) has been prepared by Technical Committee CEN/TC 276 “Surface active agents”, the secretariat of which is held by AFNOR.

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 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 [10] 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.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: 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 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/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[2)];

— bio-based content determination;

— Life Cycle Assessment (LCA)[3)];

— sustainability aspects[4)];

— 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 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, resulting in standards developed by CEN/TC 276. This Technical Specification 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 Technical Specification are complementary to the horizontal standards by CEN/TC 411.

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

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.

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.

1 Scope

This Technical Specification 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, 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 1772, *Surface active agents - Determination of wetting power by immersion (ISO 8022:1990 modified)*

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 13955, *Surface active agents - Determination of Krafft point and solubility of ionic surface active agents*

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 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.

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 [11].

[SOURCE: 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 by means of 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

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