
Alge in izdelki iz alg - Metode vzorčenja in analize - Ugotavljanje vsebnosti beta karotena in fukoksantina v mikroalgah

Algae and algae products - Methods of sampling and analysis - Determination of beta carotene and fucoxanthin content in microalgae

Algen und Algenprodukte - Verfahren zur Probenentnahme und Analyse - Bestimmung des Gehalts an Fucoxanthin, Beta-Carotin und Lutein in Mikroalgen

Algues et produits à base d'algues - Méthodes d'échantillonnage et d'analyse - Détermination de la teneur en fucoxanthine, bêta-carotène et lutéine

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Biološki izdelki

Biobased products

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EN 18206

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English Version

**Algae and algae products - Methods of sampling and
analysis - Determination of beta carotene and fucoxanthin
content in microalgae**

Algues et produits à base d'algues - Méthodes
d'échantillonnage et d'analyse - Détermination de la
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Probenentnahme und Analyse - Bestimmung des
Gehalts an Fucoxanthin, Beta-Carotin und Lutein in
Mikroalgen

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European foreword

This document (EN 18206:2026) has been prepared by Technical Committee CEN/TC 454 “Algae and algae 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of an identical text or by endorsement, at the latest by March 2027, and conflicting national standards shall be withdrawn at the latest by March 2027.

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 standardization request addressed to CEN by the European Commission.

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.

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Introduction

This document has been prepared by the experts of CEN/TC 454 'Algae and algae products'.

The European Committee for Standardization (CEN) was requested by the European Commission (EC) to draft European standards or European standardization deliverables to support the implementation of Article 3 of Directive 2009/28/EC for algae and algae-based products or intermediates.

This request, presented as Mandate M/547¹, also contributes to the Communication on “Innovating for Sustainable Growth: A Bio economy for Europe”.

The former working group CEN Technical Board Working Group 218 “Algae”, was created in 2016 to develop a work programme as part of this Mandate. The technical committee CEN/TC 454 'Algae and algae products' was established to carry out the work programme that will prepare a series of standards.

The interest in algae and algae-based products or intermediates has increased significantly in Europe as a valuable source including but not limited to, carbohydrates, proteins, lipids, and several pigments. These materials are suitable for use in a wide range of applications from food and feed purposes to other sectors, such as textile, cosmetics, biopolymers, biofuel and fertilizer/biostimulants. Standardization was identified as having an important role in order to promote the use of algae and algae products.

The work of CEN/TC 454 should improve the reliability of the supply chain, thereby improving the confidence of industry and consumers in algae, which include macroalgae, microalgae, cyanobacteria, Labyrinthulomycetes, algae-based products or intermediates and will promote and support commercialisation of the European algae industry.

Given the importance of carotenoids in algae and algae products, it is important to have a good standardized method to determine the amount of the carotenoids. Since there are a lot of carotenoids, only the determination of beta-carotene and fucoxanthin is incorporated in this document.

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¹ Available at <http://ec.europa.eu/growth/tools-databases/mandates/index.cfm?fuseaction=refSearch.search#>

1 Scope

This document specifies a laboratory method for the determination of the carotenoid content in microalgae. This method is based on the principles of chlorophyll a determination described in EN 18034. This method has been validated for the microalgae species *Nannochloropsis* and *Phaeodactylum*. This document is only validated for betacarotene and fucoxanthin, but could be used for other carotenoids as well. Given small adaptations to be able to measure smaller concentrations, this method could also be used for macro algae.

NOTE This method has been validated in an interlaboratory study for the following carotenoids for levels of approximately 0,1 to 10 mg/g by weight:

- Beta-carotene;
- fucoxanthin.

For the validation, the following matrices were used:

- *Nannochloropsis* sp.;
- *Phaeodactylum*.

For detailed information on the validation, see 9.2 and Annex B. Additionally, lutein was tested and *Saccharina latissima* was used as an additional matrix. However, these results could not be validated. The results of these studies have been included in informative Annex C.

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 17399, *Algae and algae products - Vocabulary*

EN 17605:2022, *Algae and algae products - Methods of sampling and analysis - Sample treatment*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in EN 17399 and the following apply.

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

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

3.1

carotenoid

accessory pigment of the class of tetraterpenoids including carotenes and xanthophylls