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English Version

**Algae and algae products - Food and feed applications:  
General overview of limits, procedures and analytical  
methods**

This Technical Report was approved by CEN on 4 January 2021. It has been drawn up by the Technical Committee CEN/TC 454.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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## European foreword

This document (CEN/TR 17559:2021) has been prepared by Technical Committee CEN/TC 454 “Algae and algae products”, the secretariat of which is held by NEN.

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.

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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/547<sup>1</sup>, 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.

This document has been prepared in close collaboration with the CEN/TC 454 working groups. The European standards and technical reports developed in this mandate include:

### **CEN/TC 454/WG 1 Terminology**

- CEN/TR 17559, Algae and algae products - Food and feed applications: General overview of limits, procedures and analytical methods

### **CEN/TC 454/WG 2 Identification**

- EN 17477, Algae and algae products – Identification of the biomass of microalgae, macroalgae, cyanobacteria and Labyrinthulomycetes - Detection and identification with morphological and/or molecular methods<sup>2</sup>

### **CEN/TC 454/WG 3 Productivity**

- EN 17480, Algae and algae products - Methods for the determination of productivity of algae growth sites<sup>3</sup>

### **CEN/TC 454/WG 5 Specifications for non-food/feed sector applications**

- CEN/TR 17611, Algae and algae products - Specifications for cosmetic sector applications
- CEN/TR xxx, Algae and algae products - Specifications for chemical and biofuel applications
- CEN/TR 17612, Algae and algae products - Specifications for pharmaceutical sector applications

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

<sup>2</sup> Under preparation. Stage at the time of publication: prEN 17477.

<sup>3</sup> Under preparation. Stage at the time of publication: prEN 17480.

**CEN/TC 454/WG 6 Product test methods**

- EN xxx, Algae and algae products - Methods of sampling and analysis - Determination of total lipids using the Ryckebosch-Foubert method
- EN 17605, Algae, algae products and intermediates - Methods of sampling and analysis - Sample treatment<sup>4</sup>
- EN xxx, Algae and algae products – Methods of sampling and analysis – quantification of chlorophyll

The available EU directives and other ISO and CEN standards which are of relevance for algae and algae products for food and feed applications are listed in the bibliography.

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<sup>4</sup> Under preparation. Stage at the time of publication: prEN 17605.

## 1 Scope

This document describes product specifications, product characteristics and other relevant information for algae and algae products for food, nutraceutical and animal feed applications. This document is a general overview of available limits, procedures and analytical methods applicable to algae and algae products used for food and feed applications.

This document does not apply to pharmaceutical, cosmetics, fertilizer/biostimulants, chemical and biofuel applications.

## 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 - Terms and definitions*

## 3 Terms and definitions

For the purposes 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:

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

### 3.1

#### **algae and algae products**

functional group of organisms consisting of microalgae, macroalgae, cyanobacteria, Labyrinthulomycetes and products derived thereof

Note 1 to entry: examples of products are biomass, extracts or derivatives from algae, including a.o. algal oil and algal powder.

## 4 Product specifications

### 4.1 General

The interest in algae and algae products has increased significantly in Europe as a source of carbohydrates, proteins, lipids, minerals, several pigments etc. These materials are suitable for use in a wide range of applications for food and feed purposes and to other sectors, such as textile, cosmetics, biopolymers, biofuel and fertilizers and biostimulants.

Depending on the application different information on product characteristics (Clause 5) are required as product specification by the applicable regulation.

### 4.2 Food

All algae and algae products intended for food or food ingredients are accompanied by basic information on the product in line with applicable EU regulation for food labelling as well as specific directives from some EU countries. Some are mandatory and other optional and are dependent on the target market. These product specifications for food contain information that includes but is not limited to [27]: