



SLOVENSKI STANDARD

oSIST prEN 17605:2020

01-december-2020

Alge, izdelki iz alg in vmesni proizvodi - Metode vzorčenja in analize - Obdelava vzorca

Algae, algae products and intermediates - Methods of sampling and analysis - Sample treatment

Algen, Algenprodukte und Zwischenprodukte - Methoden zur Probeentnahme und Analyse - Probebehandlung

Algues et produits à base d'algues - Méthodes d'échantillonnage et d'analyse - Traitement des échantillons

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ICS:

13.020.55 Biološki izdelki Biobased products

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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prEN 17605

October 2020

ICS 13.020.55

English Version

Algae, algae products and intermediates - Methods of sampling and analysis - Sample treatment

Algues et produits à base d'algues - Méthodes
d'échantillonnage et d'analyse - Traitement des
échantillons

Algen, Algenprodukte und Zwischenprodukte -
Methoden zur Probeentnahme und Analyse -
Probebehandlung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 454.

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

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European foreword

This document (prEN 17605:2020) has been prepared by Technical Committee CEN/TC 454 “Algae and algae products”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

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

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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.

This document has been developed with the aim to enable laboratories to conduct a standardized procedure for sample preparation to be used for analysing samples of micro- and macroalgae, algae-based products and intermediates.

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

1 Scope

This document describes the sample preparation of dry and wet samples of micro- and macroalgae, algae-based products and intermediates. This document enables laboratories analysing algae samples to report accurate dry weight percentages and to obtain representative samples possible for further examination.

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.

ISO 24333:2009, *Cereals and cereal products — Sampling*

ISO 5667-1:2006, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes and sampling techniques*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 17399:2020 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

lot

quantity of material that is assumed to be of the same production process and represented by specified sampling rules

[SOURCE: ISO 6498:2012, definition 2.2.1]

3.2

laboratory sample

sample as prepared (from the lot) for sending to the laboratory and intended for inspection or testing

[SOURCE: ISO 6498:2012, definition 2.1.2]

3.3

test sample

subsample or sample prepared from the laboratory sample and from which test portions will be taken

[SOURCE: ISO 6498:2012, definition 2.1.3]

3.4

test portion

quantity of material drawn from the test sample or from the laboratory sample if both are the same

[SOURCE: ISO 6498:2012, definition 2.1.4]

prEN 17605:2020 (E)**3.5****reserve sample**

material left over from the laboratory sample when divided or subsampled test samples have been taken and on which no further particle size reduction is done

[SOURCE: ISO 6498:2012, definition 2.1.5]

3.6**sample**

laboratory sample, a test sample, a test portion or a reserve sample as described in (3.2), (3.3), (3.4), (3.5)

3.7**dry sample**

sample with a moisture content ≤ 15 % of the total mass

3.8**wet sample**

sample with a moisture content > 15 % of the total mass

3.9**homogeneity**

degree to which a property or a constituent is uniformly distributed throughout a quantity of material

[SOURCE: ISO 6498:2012, definition 2.4.1]

Note 1 to entry: Homogeneity may be considered to having been achieved in a practical sense when the sampling error of the processed portion is negligible compared to the total error of the measurement system. Since homogeneity depends on the size of the units under consideration, a mixture of two materials may be inhomogeneous at the molecular or atomic level, but sufficiently homogeneous at the particulate level. However, uniform visual appearance does not ensure compositional homogeneity.

3.10**homogenization**

procedure to assure the homogeneity of the sample, including coarse grinding, fine grinding, mixing, agitating, blending and pulverization

3.11**partial drying**

drying procedure for wet samples, in which the sample is carefully dried to allow subsequent sample preparation procedures to be applied

Note 1 to entry: Partial drying can be performed by oven drying or freeze drying and is presented in % moisture content reduction.

3.12**coarse grinding**

first grinding step of the whole sample when the laboratory sample contains large lumps or when its particle size is above about 6 mm before mass reduction

[SOURCE: ISO 6498:2012, definition 2.4.3]

Note 1 to entry: Coarse grinding is a special kind of particle size reduction that ensures homogeneity of the laboratory sample for subsampling purposes.

3.13**fine grinding**

grinding procedure for reducing the particle size to the requested 200-500 µm, achieved by chopping, crushing, cutting, macerating, milling (grinding), pressing to obtain a homogeneous test sample for further analysis

3.14**subsampling (splitting)**

dividing the pre-treated and homogenized laboratory sample into the test sample and the reserve sample

Note 1 to entry: After subsampling (splitting), all subsamples should have the same properties as the original laboratory sample.

Note 2 to entry: Definition is similar to definition of mass reduction (ISO 6498:2012).

3.15**true value**

value which would be obtained under ideal measuring conditions where no errors occur

3.16**moisture content****loss on drying**

mass/mass volatile fraction of the sample lost after drying under test conditions

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3.17**dry weight (d.w.)**

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mass corrected for 100 % dry matter (i.e. a moisture content of 0 %)

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3.18**parameter**

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analyte or constituent or microorganism for which the sample is to be analysed by microscopic, microbiological, biological or chemical procedures

[SOURCE: ISO 6498:2012, definition 2.2.1]

3.19**stable parameter**

analyte or constituent or microorganism which does not degrade during sample preparation on common handling or storage at room temperatures of 20 °C to 25 °C

[SOURCE: ISO 6498:2012, definition 2.2.1.1]

3.20**unstable parameter**

analyte or constituent or microorganism which degrades during sample preparation on common handling or storage at room temperatures of 20 °C to 25 °C because they are volatile, degradable, or sensitive to temperature, light, enzymatic degradation or chemical oxidation

[SOURCE: ISO 6498:2012, definition 2.2.1.2]

The relations between the different definitions are given in Figure 1

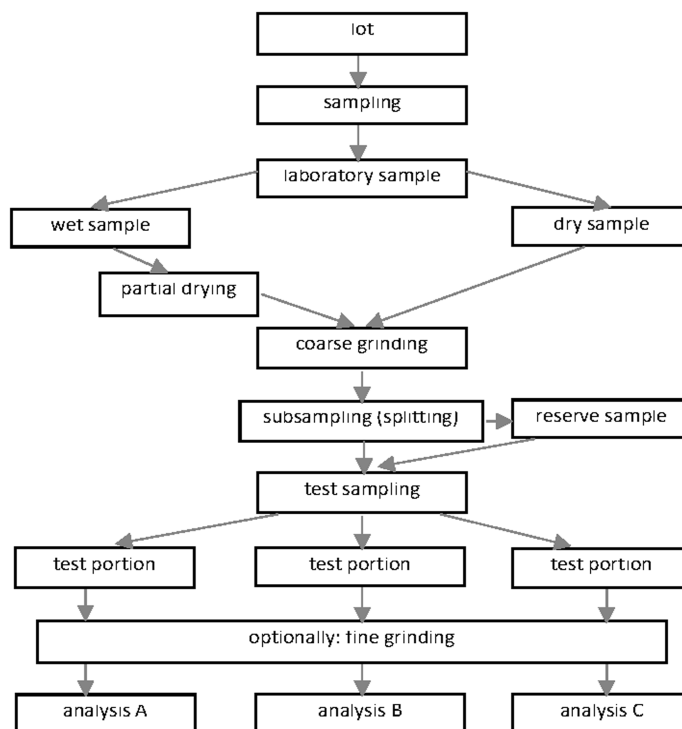


Figure 1 — Illustration of relation between the different samples types and sample preparation procedures

4 Principle

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Proper sample preparation is one of the crucial steps in obtaining the best possible result that most likely corresponds to the “true value”. All sample treatment steps depend on the different properties of the sample material and on the parameters to be analysed. Algae, algae products and intermediates are biological material, and not all parameters are stable. Therefore, special instructions concerning sample preparation for the different analysis methods are described in Clause 7.

5 Apparatus

The apparatus used for sample treatment consist of usual laboratory equipment and in particular the following. All equipment used should be appropriate to reduce the risk of contamination and oxidation during sample preparation. More information regarding the criteria for design and proper use is given in ISO 6498:2012.

5.1 General

The equipment required includes:

5.1.1 Analytical balance with an accuracy of 0,01 mg

5.1.2 Mechanical mill or mechanical microgrinder able to grind 90 % below 500 µm

5.2 Sample storage

In order to provide adequate storage the following facilities should where necessary be provided:

5.2.1 Desiccator containing dry desiccant

5.2.2 Refrigerator

5.2.3 Freezer –20 °C

5.2.4 Freezer –80 °C

5.2.5 Convection drying oven on the range from 40 °C up to 105 °C with an accuracy of ± 1 °C

5.2.6 Freeze dryer

5.3 Ash content

5.3.1 Muffle furnace

Optionally (during transport of samples for microbiological analysis:) temperature datalogger.

6 Reagents and materials

6.1 Plastic sample bags, with the following characteristics:

- water-tight;
- chemically inert;
- preferably non-transparent (for analysing the samples on unstable parameters);
- minimal content of 1 l;
- transport container, preferably electrically cooled;
- potable water;
- optionally (for cooling purposes of the transport of samples): cool packs.

7 Procedures

7.1 General

The entire sample preparation process can be divided into several process steps, from taking samples at a production location or from an algae-based or intermediate product to sample preparation according to procedures that ensure a representative result for the type of analysis selected. The several process steps are illustrated in Figure 2.

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