

English Version

## Organic and organo-mineral fertilizers - Determination of specific elements

Engrais organiques et organo-minéraux -  
Détermination des éléments spécifiques

Organische und organisch-mineralische Düngemittel -  
Bestimmung spezifischer Elemente

This Technical Specification (CEN/TS) was approved by CEN on 13 March 2022 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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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## European foreword

This document (CEN/TS 17777:2022) has been prepared by Technical Committee CEN/TC 260 “Fertilizers and liming materials” the secretariat of which is held by DIN.

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 given to CEN by the European Commission and the European Free Trade Association.

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.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

Regulation (EU) 2019/1009 [1] lays down the rules on the making available on the market of EU fertilizing products and the specific safety and quality requirements for the defined product function categories (PFCs). Organic and organo-mineral fertilizers have been classified as PFC 1(A) and PFC 1(B).

In this document the normative references of the test methods to be used for organic and organo-mineral fertilizers are defined in order to measure the compliance with the related requirement in the Regulation (EU) 2019/1009 [1].

## 1 Scope

This document specifies references to the methods for the determination of the following specific elements in organic and organo-mineral fertilizers:

- Determination of the total phosphorus content;
- Determination of the total potassium content;
- Determination of the total calcium content;
- Determination of the total magnesium content;
- Determination of the total sodium content;
- Determination of the total sulphur content;
- Determination of the inorganic arsenic content;
- Determination of the cadmium content;
- Determination of the total chromium content;
- Determination of the total mercury content;
- Determination of the total nickel content;
- Determination of the total lead content;
- Determination of the total copper content;
- Determination of the total zinc content;
- Determination of the water-soluble calcium content;
- Determination of the water-soluble magnesium content;
- Determination of the water-soluble sodium content;
- Determination of the water-soluble sulphur content.

This document specifies references to the methods for the determination of the following specific elements in organo-mineral fertilizers:

- Determination of the water-soluble phosphorus content;
- Determination of the water-soluble potassium content;
- Determination of the neutral ammonium citrate soluble phosphorus content
- Determination of the formic acid soluble phosphorus content;
- Determination of the total boron content;
- Determination of the total cobalt content;

- Determination of the total iron content
- Determination of the total manganese content
- Determination of the total molybdenum content;
- Determination of the water-soluble boron content;
- Determination of the water-soluble cobalt content;
- Determination of the water-soluble copper content;
- Determination of the water-soluble iron content;
- Determination of the water-soluble manganese content;
- Determination of the water-soluble molybdenum content;
- Determination of the water-soluble zinc content.

This document is applicable to fertilizing products, which are classified as PFC 1(A) and PFC 1(B) or the PFC 1(A) and PFC 1(B) component in PFC 7 of Regulation (EU) 2019/1009 [1]. However, the present method was not validated for blends.

## 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 12944-1:1999,<sup>1</sup> *Fertilizers and liming materials — Vocabulary — Part 1: General terms*

EN 12944-2:1999,<sup>2</sup> *Fertilizers and liming materials — Vocabulary — Part 2: Terms relating to fertilizers*

CEN/TS 17766:2022, *Organic and organo-mineral fertilizers — Extraction by water for subsequent determination of elements*

CEN/TS 17767:2022, *Organo-mineral fertilizers — Extraction of phosphorus by formic acid*

CEN/TS 17768:2022, *Organic and organo-mineral fertilizers — Digestion by aqua regia for subsequent determination of elements*

CEN/TS 17769:2022, *Organic and organo-mineral fertilizers — Determination of the mercury content*

CEN/TS 17770:2022, *Organic and organo-mineral fertilizers — Determination of the total content of specific elements by ICP-AES after digestion by aqua regia*

CEN/TS 17774:2022, *Organic and organo-mineral fertilizers — Determination of the content of specific elements by ICP-AES after extraction by water*

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<sup>1</sup> As impacted by EN 12944-1:1999/AC:2000.

<sup>2</sup> As impacted by EN 12944-2:1999/AC:2000.

CEN/TS 17775:2022, *Organic and organo-mineral fertilizers — Determination of the inorganic arsenic content*

CEN/TS 17779:2022, *Organo-mineral fertilizers — Extraction of phosphorus, which is soluble in neutral ammonium citrate*

### **3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 12944-1:1999 and EN 12944-2:1999 apply.

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

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

### **4 Sampling and sample preparation**

Sampling and sample preparation are not part of this document.

### **5 Determination of specific elements**

#### **5.1 Total phosphorus content**

The total phosphorus content shall be determined in accordance with CEN/TS 17768:2022 and CEN/TS 17770:2022.

#### **5.2 Total potassium content**

The total potassium content shall be determined in accordance with CEN/TS 17768:2022 and CEN/TS 17770:2022.

#### **5.3 Total calcium content**

The total calcium content shall be determined in accordance with CEN/TS 17768:2022 and CEN/TS 17770:2022.

#### **5.4 Total magnesium content**

The total magnesium content shall be determined in accordance with CEN/TS 17768:2022 and CEN/TS 17770:2022.

#### **5.5 Total sodium content**

The total sodium content shall be determined in accordance with CEN/TS 17768:2022 and CEN/TS 17770:2022.

#### **5.6 Total sulphur content**

The total sulphur content shall be determined in accordance with CEN/TS 17768:2022 and CEN/TS 17770:2022.

#### **5.7 Inorganic arsenic content**

The inorganic arsenic content shall be determined in accordance with CEN/TS 17768:2022, CEN/TS 17770:2022 and CEN/TS 17775:2022.