



**SLOVENSKI STANDARD**  
**kSIST-TS FprCEN/TS 17777:2021**  
**01-december-2021**

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**Organska in organsko-mineralna gnojila - Določevanje določenih elementov**

Organic and organo-mineral fertilizers - Determination of specific elements

Organische und organisch-mineralische Düngemittel - Bestimmung spezifischer Elemente

Engrais organiques et organo-minéraux - Détermination des éléments spécifiques

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**Ta slovenski standard je istoveten z: FprCEN/TS 17777**

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**ICS:**

65.080                      Gnojila                                      Fertilizers

**kSIST-TS FprCEN/TS 17777:2021**                      **en,fr,de**

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TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

**FINAL DRAFT**  
**FprCEN/TS 17777**

November 2021

ICS 65.080

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 draft Technical Specification is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 260.

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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 (FprCEN/TS 17777:2021) has been prepared by Technical Committee CEN/TC 260 “Fertilizers and liming materials” the secretariat of which is held by DIN.

This document is currently submitted to the Vote on TS.

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

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**FprCEN/TS 17777:2021 (E)****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].

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## 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;

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- 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, *Fertilizers and liming materials and soil improvers - Vocabulary - Part 1: General terms*

EN 12944-2:1999, *Fertilizers and liming materials and soil improvers - Vocabulary - Part 2: Terms relating to fertilizers*

FprCEN/TS 17766:2021, *Organic and organo-mineral fertilizers – Extraction by water for subsequent determination of elements*

FprCEN/TS 17767:2021, *Organo-mineral fertilizers – Extraction of phosphorus by formic acid*

FprCEN/TS 17768:2021, *Organic and organo-mineral fertilizers – Digestion by aqua regia for subsequent determination of elements*

FprCEN/TS 17769:2021, *Organic and organo-mineral fertilizers – Determination of the mercury content*

FprCEN/TS 17770:2021, *Organic and organo-mineral fertilizers – Determination of the total content of specific elements by ICP-AES after digestion by aqua regia*

FprCEN/TS 17774:2021, *Organic and organo-mineral fertilizers – Determination of the content of specific elements by ICP-AES after extraction by water*

FprCEN/TS 17775:2021, *Organic and organo-mineral fertilizers – Determination of the inorganic arsenic content*



FprCEN/TS 17779:2021, *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 FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

#### 5.2 Total potassium content

The total potassium content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

#### 5.3 Total calcium content

The total calcium content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

#### 5.4 Total magnesium content

The total magnesium content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

#### 5.5 Total sodium content

The total sodium content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

#### 5.6 Total sulphur content

The total sulphur content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

#### 5.7 Inorganic arsenic content

The inorganic arsenic content shall be determined in accordance with FprCEN/TS 17768:2021, FprCEN/TS 17770:2021 and FprCEN/TS 17775:2021.

**FprCEN/TS 17777:2021 (E)****5.8 Cadmium content**

The cadmium content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

**5.9 Total chromium content**

The total chromium content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

**5.10 Total mercury content**

The total mercury content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17769:2021.

**5.11 Total nickel content**

The total nickel content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

**5.12 Total lead content**

The total lead content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

**5.13 Total copper content**

The total copper content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

**5.14 Total zinc content**

The total zinc content shall be determined in accordance with FprCEN/TS 17768:2021 and FprCEN/TS 17770:2021.

**5.15 Water-soluble calcium content**

The water-soluble calcium content shall be determined in accordance with FprCEN/TS 17776:2021 and FprCEN/TS 17774:2021.

**5.16 Water-soluble magnesium content**

The water-soluble magnesium content shall be determined in accordance with FprCEN/TS 17776:2021 and FprCEN/TS 17774:2021.

**5.17 Water-soluble sodium content**

The water-soluble sodium content shall be determined in accordance with FprCEN/TS 17776:2021 and FprCEN/TS 17774:2021.

**5.18 Water-soluble sulphur content**

The water-soluble sulphur content shall be determined in accordance with FprCEN/TS 17776:2021 and FprCEN/TS 17774:2021.

**5.19 Water-soluble phosphorus content**

The water-soluble phosphorus content shall be determined in accordance with FprCEN/TS 17776:2021 and FprCEN/TS 17774:2021.