





TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
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**CEN/TS 17752**

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English Version

**Inorganic fertilizers - Determination of specific inhibitors**

Engrais inorganiques - Détermination des inhibiteurs  
spécifiques

Anorganische Düngemittel - Bestimmung spezifischer  
Hemmstoffe

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

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## European foreword

This document (CEN/TS 17752:2022) 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.

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**CEN/TS 17752:2022 (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). Inorganic fertilizers have been classified into PFC 1(C).

The specific safety and quality requirements are defined in this document as well as normative references of the test methods to be used in order to measure the compliance with the related parameter in the Regulation (EU) 2019/1009 [1].

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## 1 Scope

This document specifies references to the methods for the determination of nitrification inhibitors and urease inhibitors in inorganic fertilizers.

This document is applicable to EU fertilizing products classified as PFC 1(C) and PFC 7 as long as the blend only consists of EU fertilizing products classified as PFC 1(C), PFC 2 and PFC 5 as specified in the Regulation (EU) 2019/1009 [1].

## 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 1482-1:2007, *Fertilizers and liming materials — Sampling and sample preparation — Part 1: Sampling*

EN 1482-2:2007, *Fertilizers and liming materials — Sampling and sample preparation — Part 2: Sample preparation*

EN 1482-3:2016, *Fertilizers and liming materials — Sampling and sample preparation — Part 3: Sampling of static heaps*

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*

EN 15360:2007, *Fertilizers — Determination of dicyandiamide — Method using high-performance liquid chromatography (HPLC)*

EN 15688:2008, *Fertilizers — Determination of urease inhibitor N-(n-butyl)thiophosphoric triamide (NBPT) using high-performance liquid chromatography (HPLC)*

EN 15905:2010, *Fertilizers — Determination of 3-methylpyrazole (MP) using high-performance liquid chromatography (HPLC)*

EN 16024:2011, *Fertilizers — Determination of 1H-1,2,4-triazole in urea and in fertilizers containing urea — Method using high-performance liquid chromatography (HPLC)*

EN 16075:2011, *Fertilizers — Determination of N-(2-nitrophenyl)phosphoric triamide (2-NPT) in urea and fertilizers containing urea — Method using high-performance liquid chromatography (HPLC)*

EN 16328:2012, *Fertilizers — Determination of 3,4-dimethyl-1H-pyrazole phosphate (DMPP) — Method using high-performance liquid chromatography (HPLC)*

EN 16651:2015, *Fertilizers — Determination of N-(n-Butyl)thiophosphoric acid triamide (NBPT) and N-(n-Propyl)thiophosphoric acid triamide (NPPT) — Method using high-performance liquid chromatography (HPLC)*

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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 17752:2022 (E)**

EN 17090:2018, *Fertilizers — Determination of nitrification inhibitor DMPSA in fertilizers — Method using high-performance liquid chromatography (HPLC)*

**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 standardization 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****4.1 Sampling**

Samples taken for quality control purposes shall be representative, as described in EN 1482-1:2007. Sampling of static heaps shall be performed according to EN 1482-3:2016.

**4.2 Sample preparation**

The sample preparation for quality control purposes shall be performed according to EN 1482-2:2007.

**5 Determination of specific inhibitors****5.1 Determination of the nitrification inhibitor content****5.1.1 Determination of dicyandiamide**

The content of dicyandiamide shall be determined according to EN 15360:2007.

**5.1.2 Determination of 3-methylpyrazole (MP)**

The content of 3-methylpyrazole shall be determined according to EN 15905:2010.

**5.1.3 Determination of 1H-1,2,4-triazole**

The content of 1H-1,2,4-triazole in urea and in inorganic fertilizers containing urea shall be determined according to EN 16024:2011.

**5.1.4 Determination of 3,4-dimethyl-1H-pyrazole phosphate (DMPP)**

The content of 3,4-dimethyl-1H-pyrazole phosphate shall be determined according to EN 16328:2012.

NOTE EN 16328:2012 expresses the result in mg/kg whereas Regulation (EU) 2019/1009 [1] expects a mass fraction in %. Conversion to be made: mg/kg equals a mass fraction of 0,000 1 %.

**5.1.5 Determination of 2-(3,4-dimethyl-pyrazol-1-yl)-succinic acid (DMPSA)**

The content of DMPSA shall be determined according to EN 17090:2018.

NOTE EN 17090:2018 expresses the result in mg/kg whereas Regulation (EU) 2019/1009 [1] expects a mass fraction in %. Conversion to be made: mg/kg equals a mass fraction of 0,000 1 %.



## 5.2 Determination of the urease inhibitor content

### 5.2.1 Determination of N-(n-butyl)thiophosphoric triamide (NBPT)

The content of N-(n-butyl)thiophosphoric triamide shall be determined according to EN 15688:2008.

### 5.2.2 Determination of N-(2-nitrophenyl)phosphoric triamide (2-NPT)

The content of N-(2-nitrophenyl)phosphoric triamide in urea and inorganic fertilizers containing urea shall be determined according to EN 16075:2011.

### 5.2.3 Determination of N-(n-butyl)thiophosphoric triamide (NBPT) and N-(n-propyl)thiophosphoric triamide (NPPT)

The contents of N-(n-butyl)thiophosphoric triamide and N-(n-propyl)thiophosphoric triamide shall be determined according to EN 16651:2015.

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## Bibliography

- [1] Regulation (EU) 2019/1009 of the European Parliament and of the Council of 5 June 2019 laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009 and repealing Regulation (EC) No 2003/2003

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