

English Version

Inorganic fertilizers - Determination of specific inhibitors

Engrais inorganiques - Détermination des inhibiteurs
spécifiques

Anorganische Düngemittel - Bestimmung spezifischer
Hemmstoffe

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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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.

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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].

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 12944-1:1999,¹ *Fertilizers and liming materials — Vocabulary — Part 1: General terms*

EN 12944-2:1999,² *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)*

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

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

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 %.