

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)

EESTI STANDARDI EESSÕNA

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English Version

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)

Engrais - Dosage du N-(n-butyl)triamide de l'acide thiophosphorique (NBPT) et du N-(n-propyl)triamide de l'acide thiophosphorique (NPPT) - Méthode par chromatographie liquide à haute performance (HPLC)

Düngemittel - Bestimmung von N-(n-Butyl)thiophosphorsäuretriämid (NBPT) und N-(n-Propyl)thiophosphorsäuretriämid (NPPT) - Verfahren mit Hochleistungs-Flüssigchromatographie (HPLC)

This European Standard was approved by CEN on 16 April 2015.

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Foreword

This document (EN 16651:2015) has been prepared by Technical Committee CEN/TC 260 "Fertilizers and liming materials", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2015, and conflicting national standards shall be withdrawn at the latest by November 2015.

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1 Scope

This European Standard specifies a method for the quantitative determination of the urease inhibitors N-(n-Butyl)thiophosphoric acid triamide (NBPT, CAS-No. 94317-64-3) and N-(n-Propyl)thiophosphoric acid triamide (NPPT, CAS-No. 916809-14-8) content in urea based fertilizers using high-performance liquid chromatography (HPLC).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696)*

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.

4 Principle

The fertilizer sample is diluted in water, grade 1. The concentration of N-(n-Butyl)thiophosphoric acid triamide (NBPT) and N-(n-Propyl)thiophosphoric acid triamide (NPPT) is determined in diluted aqueous solution by high-performance liquid chromatography (HPLC) using an UV detector at 205 nm.

5 Reagents

Use only reagents of recognized analytical grade.

5.1 Water, grade 1 according to EN ISO 3696.

5.2 Acetonitrile, HPLC grade.

5.3 Urea, analytical pure.

5.4 NBPT, N-(n-Butyl)thiophosphoric acid triamide, CAS-No. 94317-64-3, analytical pure.

5.5 NPPT, N-(n-Propyl)thiophosphoric acid triamide, CAS-No. 916809-14-8, analytical pure.

5.6 Eluent.

Mix in a 1 000 ml volumetric flask (6.2), 750 ml of water (5.1) and 250 ml acetonitrile (5.2) and filter through a micro filter (6.3).

5.7 Stock solution, $\rho(\text{NBPT}) = 0,20 \text{ mg/ml}$ and $\rho(\text{NPPT}) = 0,12 \text{ mg/ml}$.