



SLOVENSKI STANDARD
kSIST-TS FprCEN/TS 17762:2021
01-december-2021

[Not translated]

Inorganic fertilizers - Determination of the copper content in ammonium nitrate fertilizers of high nitrogen content

Anorganische Düngemittel - Bestimmung des Kupfergehaltes in Ammoniumnitratdüngemitteln mit hohem Stickstoffgehalt

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Ta slovenski standard je istoveten z: FprCEN/TS 17762

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ICS:

65.080 Gnojila Fertilizers

kSIST-TS FprCEN/TS 17762:2021 en,fr,de

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FprCEN/TS 17762

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English Version

**Inorganic fertilizers - Determination of the copper content
in ammonium nitrate fertilizers of high nitrogen content**

Anorganische Düngemittel - Bestimmung des
Kupfergehaltes in Ammoniumnitratdüngemitteln mit
hohem Stickstoffgehalt

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 17762:2021) 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.

WARNING — The use of this document can involve hazardous materials, operations and equipment. This document does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

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FprCEN/TS 17762:2021 (E)**1 Scope**

This document specifies a method for the determination of the copper content in ammonium nitrate fertilizers of high nitrogen content.

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

EN 12944-1, *Fertilizers and liming materials and soil improvers - Vocabulary - Part 1: General terms*

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

3 Terms and definitions

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

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

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

4 Principle

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The sample is dissolved in dilute hydrochloric acid and the copper is determined by atomic absorption spectrophotometry (AAS) or by inductive coupled plasma - optical emission spectroscopy (ICP-OES).

5 Reagents

Use only reagents of recognized analytical grade and distilled or demineralized water (grade 3 according to EN ISO 3696:1995).

5.1 Hydrochloric acid, density $\rho = 1,18$ g/ml, at 20 °C.

5.2 Hydrochloric acid, substance concentration $c = 6$ mol/l.

5.3 Hydrochloric acid, $c = 0,5$ mol/l.

5.4 Ammonium nitrate.

5.5 Hydrogen peroxide, 30 % m/V.

5.6 Copper stock solution.

Weigh, to the nearest 0,001 g, 1 g of pure copper (Cu), dissolve in 25 ml of hydrochloric acid(5.2), add 5 ml of hydrogen peroxide (5.5) in portions and dilute to 1 litre with water. One ml of this solution contains 1000 µg of copper.

A commercially available stock copper solution may be used.

5.7 Copper standard solution.

Dilute 10 ml of copper stock solution (5.6) to 100 ml with water and then dilute 10 ml of the resulting solution, to 100 ml with water, 1 ml of the final dilution contains 10 µg of copper.

Prepare this solution at the time of use.

6 Apparatus and equipment

Usual laboratory glassware and equipment and, in particular, the following.

6.1 Atomic absorption spectrophotometer with a copper lamp (324,8 nm), or inductive coupled plasma - optical emission spectrometer.

The choice of the apparatus is depending on availability of equipment.

6.2 Balance, capable of weighing to the nearest 0,001 g.

6.3 Beaker, capacity 400 ml.

6.4 Graduated flask, capacity 250 ml and 1 000 ml.

6.5 Copper-free filter paper.

7 Sampling and sample preparation

Sampling is not part of the method specified in this document. A recommended sampling method is given in EN 1482-1.

Sample preparation shall be carried out in accordance with EN 1482-2.

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8 Procedure

8.1 Preparation of the solution for analysis

Weigh, to the nearest 0,001 g, 25 g of the sample, place it in a 400-ml beaker (6.3), add carefully 20 ml of hydrochloric acid (5.1) (there may be a vigorous reaction due to carbon dioxide formation). Add more hydrochloric acid, if necessary. When gas formation has stopped, evaporate to dryness on a steam bath, stirring occasionally with a glass rod. Add 15 ml hydrochloric acid (5.2) and 120 ml of water. Stir with the glass rod, which should be left in the beaker, and cover the beaker with a watch glass. Boil the solution gently until dissolution is complete and then cool.

Transfer the solution quantitatively into a 250-ml graduated flask (in case of ICP-OES: transfer into 1 000-ml graduated flask), by washing the beaker with 5 ml hydrochloric acid (5.2), and twice with 5 ml of boiling water, fill up to the mark with hydrochloric acid (5.3) and mix carefully.

Filter through a copper-free filter paper (6.5), discarding the first 50 ml.

8.2 Blank solution

Prepare a blank solution from which only the sample has been omitted and allow for this in the calculation of the final results.