SLOVENSKI STANDARD
SIST-TS CEN/TS 15925:2010

01-februar-2010

Gnojila - Ekstrakcija celotnega žvepla v različnih oblikah

Fertilizers - Extraction of total sulfur present in various forms

Düngemittel - Extraktion von Gesamtschwefel, der in verschiedener Form vorliegen kann

Engrais - Extraction du soufre total présent sous différentes formes

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Ta slovenski standard je istoveten z: **CEN/TS 15925:2009**

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ICS:

65.080	Gnojila	Fertilizers

SIST-TS CEN/TS 15925:2010 **en,fr,de**

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TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 15925

September 2009

ICS 65.080

English Version

Fertilizers - Extraction of total sulfur present in various forms

Engrais - Extraction du soufre total présent sous différentes formes

Düngemittel - Extraktion von Gesamtschwefel, der in verschiedener Form vorliegen kann

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Ref. No. CEN/TS 15925:2009: E

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Foreword

This document (CEN/TS 15925:2009) 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 [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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1 Scope

This document specifies a method for the extraction of the total sulfur contained in fertilizers in elemental form and/or in other chemical combinations.

The method is applicable to EC fertilizers for which a declaration of the total sulfur present in various forms (elemental, thiosulfate, sulfite, sulfate) is provided.

2 Normative references

The following referenced documents are indispensable for the application 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 12944-1:1999, *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*

CEN/TS 15749, *Fertilizers – Determination of sulfates content using three different methods*

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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.

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4 Sampling

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. Grinding is recommended for homogeneity reasons.

5 Principle

Elemental sulfur is converted in an alkaline medium into polysulfides and thiosulfate; these, together with any sulfites that may be present, are then oxidized with hydrogen peroxide. The various forms of sulfur are thus converted into sulfate that is determined by precipitation of barium sulfate.

6 Reagents

Use only reagents of recognized analytical grade and distilled or demineralized water.

6.1 Diluted hydrochloric acid.

Mix one volume of hydrochloric acid (d = 1,18) with one volume of water.

6.2 Sodium hydroxide solution, NaOH 30 % minimum, d = 1,33.

6.3 Hydrogen peroxide solution, w = 30 %.

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6.4 Barium chloride, aqueous solution of $BaCl_2 . 2H_2O$, ρ = 122 g/l.

7 Apparatus

7.1 Electric hot plate, with adjustable temperature.

7.2 400 ml beaker.

7.3 600 ml beaker.

7.4 250 ml volumetric flask.

8 Procedure

8.1 Test portion

Weigh to an accuracy 1 mg a quantity of the laboratory sample containing between 80 mg and 350 mg of sulfur (S) or 200 mg and 875 mg of SO_3.

As a rule (where S < 15 %), weigh 2,5 g. Place the test portion in a beaker (7.2).

8.2 Oxidation

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Add 20 ml of sodium hydroxide solution (6.2) and 20 ml of water. Cover with a watch glass. Boil for 5 min on the hot plate (7.1). Remove from the hot plate. Using a jet of hot water, collect the sulfur sticking to the sides of the beaker and boil for 20 min. Leave to cool.

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Add 2 ml increments of hydrogen peroxide (6.3) until no reaction is observed. Six to eight of hydrogen peroxide will be necessary. Allow oxidation to continue for 1 h, and then bring to the boil for 0,5 h. Leave to cool.

8.3 Preparation of the solution to be analyzed

Add approximately 50 ml of water and 50 ml of the hydrochloric acid solution (6.1).

a) If the level of sulfur (S) is less than 5 %:

Filter into a 600 ml beaker (7.3). Wash the residue on the filter several times with cold water. After washing, check for the absence of sulfate in the last drops of the filtrate using a barium chloride solution (6.4). The filtrate shall be perfectly clear. Sulfate is determined on the whole of the filtrate in accordance with CEN/TS 15749.

b) If the level of sulfur (S) is at above 5 %:

Transfer quantitatively into a 250 ml volumetric flask (7.4), make up to volume with water and mix. Filter through a dry filter into a dry container; the filtrate shall be completely clear. Stopper if the solution is not to be used immediately. Determine sulfates on an aliquot of this solution by precipitation in the form of barium sulfate in accordance with CEN/TS 15749.

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Bibliography

[1] Regulation (EC) No 2003/2003 of the European Parliament and of the Council of 13 October 2003 relating to fertilisers, Official Journal L 304, 21/11/2003, Pp. 1-194, Annex IV, method 8.2

[2] EN 1482-1, *Fertilizers and liming materials – Sampling and sample preparation – Part 1: Sampling*

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