



BSI Standards Publication

# Fertilizers — Extraction of total calcium, total magnesium, total sodium and total sulfur in the forms of sulfates

**National foreword**

This British Standard is the UK implementation of EN 15960:2011. It supersedes DD CEN/TS 15960:2009, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CII/37, Fertilisers and related chemicals.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EUROPEAN STANDARD

**EN 15960**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2011

ICS 65.080

Supersedes CEN/TS 15960:2009

English Version

**Fertilizers - Extraction of total calcium, total magnesium, total sodium and total sulfur in the forms of sulfates**

Engrais - Extraction du calcium total, du magnésium total, du sodium total et du soufre total présent sous forme de sulfate

Düngemittel - Extraktion von Gesamtcalcium, Gesamtmagnesium und Gesamtnatrium sowie von Gesamtschwefel in Form von Sulfat

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## Contents

Page

Foreword.....	3
1 Scope .....	4
2 Normative references .....	4
3 Terms and definitions .....	4
4 Principle.....	4
5 Sampling.....	4
6 Reagents.....	4
7 Apparatus .....	5
8 Procedure .....	5
8.1 Test portion .....	5
8.2 Extraction .....	5
9 Test report .....	5
Bibliography .....	6

## Foreword

This document (EN 15960:2011) 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of an identical text or by endorsement, at the latest by May 2012, and conflicting national standards shall be withdrawn at the latest by May 2012.

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.

This document supersedes CEN/TS 15960:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

The following has been added to the former edition of the European Standard:

- a) the CEN Technical Specification has been adopted as a European Standard;
- b) editorial revision.

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## 1 Scope

This European Standard specifies a method for the extraction of total calcium, total magnesium and total sodium and for the extraction of total sulfur present in the form of sulfates, so that the same extract may be used for the determination of each nutrient required.

The method is applicable to fertilizers listed in Regulation (EC) 2003/2003, Annex I [2], for which a declaration of total calcium, total magnesium, total sodium, and total sulfur in the form of sulfates is provided for in this Regulation.

## 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*

## 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

Extraction of the magnesium, sodium and sulfur present in the form of sulfates in the fertilizer by boiling in diluted hydrochloric acid under the specified conditions.

## 5 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 of the laboratory sample is recommended for homogeneity reasons.

## 6 Reagents

**6.1 Water**, distilled or demineralized.

**6.2 Diluted hydrochloric acid**, mix one volume of hydrochloric acid,  $\rho = 1,18$  g/ml, with one volume of water.

## 7 Apparatus

- 7.1 **Standard laboratory equipment.**
- 7.2 **Electric hot plate**, with adjustable temperature.
- 7.3 **Beaker**, capacity 600 ml.
- 7.4 **Graduated flask**, capacity 500 ml.
- 7.5 **Dry filter.**

## 8 Procedure

### 8.1 Test portion

Weigh, to the nearest 1 mg, 5 g of the laboratory sample and place it in the beaker (7.3).

When the fertilizer contains more than 15 % of sulfur (S) i.e. 37,5 %  $\text{SO}_3$ , and more than 18,8 % of calcium (Ca) i.e. 26,3 % CaO, carry out the extraction of calcium and sulfur using a test portion of 1 g, weighed to the nearest 1 mg. Place it in the beaker (7.3).

### 8.2 Extraction

Add approximately 400 ml of water (6.1) to the test portion (8.1) and, taking care when the sample contains a significant quantity of carbonates, 50 ml of diluted hydrochloric acid (6.2) a small amount at a time. Bring to the boil and maintain for 30 min. Allow to cool, stirring occasionally. Decant quantitatively into a graduated flask (7.4). Make up to volume with water (6.1), and mix. Pass through a filter (7.5) into a dry container, discarding the initial portion.

The extract shall be completely transparent. Stopper the filtrate if it is not used immediately.

## 9 Test report

The test report shall contain at least the following information:

- a) all information necessary for the complete identification of the sample;
- b) test method used with reference to this document;
- c) test results obtained;
- d) date of sampling and sampling procedure (if known);
- e) date when the analysis was finished;
- f) whether the requirement of the repeatability limit has been fulfilled;
- g) all operating details not specified in this document, or regarded as optional, together with details of any incidents occurred when performing the method, which might have influenced the test result(s).

## Bibliography

- [1] EN 1482-1, *Fertilizers and liming materials — Sampling and sample preparation — Part 1: Sampling*
- [2] *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, p. 1-194, Annex I and Annex IV, Method 8.1





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