

BS EN 15926:2011



BSI Standards Publication

Fertilizers — Extraction of water soluble sulfur where the sulfur is in various forms

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of EN 15926:2011. It supersedes DD CEN/TS 15926:2009 which is withdrawn.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.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© BSI 2011

ISBN 978 0 580 73958 3

ICS 65.080

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 October 2011.

Amendments issued since publication

Date	Text affected
------	---------------

EUROPEAN STANDARD

EN 15926

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2011

ICS 65.080

Supersedes CEN/TS 15926:2009

English Version

Fertilizers - Extraction of water soluble sulfur where the sulfur is in various forms

Engrais - Extraction du soufre soluble dans l'eau, lorsque le soufre est présent sous différentes formes

Düngemittel - Extraktion von wasserlöslichem Schwefel, der in verschiedener Form vorliegen kann

This European Standard was approved by CEN on 18 August 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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
9 Test report	6
Bibliography	7

Foreword

This document (EN 15926:2011) 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 March 2012, and conflicting national standards shall be withdrawn at the latest by March 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 15926:2009.

The following changes have been made to the former edition:

- a) the CEN Technical Specification has been adopted as a European Standard;
- b) Clause 9 "Test report" has been added;
- c) The document has been editorially revised.

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This document specifies a method for the extraction of water-soluble sulfur contained in fertilizers in various forms.

The method is applicable to EC-fertilizers for which a declaration of the water-soluble sulfur trioxide is provided for.

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*

EN 15749, *Fertilizers — Determination of sulfates content using three different methods*

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 sulfur is dissolved in cold water and converted into sulfate by oxidation with hydrogen peroxide in an alkaline medium.

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

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

6.1 Diluted hydrochloric acid.

Mix one volume of hydrochloric acid, $w = 37\%$, with one volume of water.

6.2 Sodium hydroxide solution, $w = 30\%$ to 32% .

6.3 Hydrogen peroxide solution, $w = 30\%$.

7 Apparatus

7.1 500 ml graduated flask, Stohmann.

7.2 Rotary shaker, 30 to 40 turns per minute.

7.3 Electric hot plate, with adjustable temperature.

8 Procedure

8.1 Test portion

Where fertilizers contain a maximum of 3 % of sulfur (S) i. e. 7,5 % SO_3 , weigh an amount of 5 g of the laboratory sample of fertilizer to an accuracy of 1 mg.

Where fertilizers contain more than 3 % of sulfur (S), weigh an amount of 1 g of the laboratory sample of fertilizer to an accuracy of 1 mg.

Place the test portion in a flask (7.1).

8.2 Preparation of the solution

Add approximately 400 ml of water to the test portion in the flask (7.1). Stopper. Shake in the rotary shaker (7.2) for 30 min. Let stand for 24 h at room temperature without shaking or stirring and make up to volume with water and mix. Pass through a dry filter into a dry container. Stopper if the solution is not to be used immediately.

8.3 Oxidation of the aliquot portion to be analyzed

Take an aliquot portion of the extraction solution (see 8.2) not exceeding 50 ml and, if possible, containing between 20 mg and 100 mg of sulfur (S).

Make up the volume to 50 ml with water, if necessary. Add 3 ml of sodium hydroxide solution (6.2) and 2 ml of hydrogen peroxide solution (6.3). Cover with a watch glass and boil gently for 1 h on the hot plate (7.3). Keep adding 1 ml increments of hydrogen peroxide solution for as long as the reaction continues (maximum quantity 5 ml).

Then leave to cool. Remove the watch glass and wash the underside into the beaker. Add approximately 20 ml of diluted hydrochloric acid (6.1). Make up to approximately 300 ml with water.

Determine the content of sulfates on the whole of the oxidized solution in accordance with EN 15749.

9 Test report

The test report shall contain at least the following information:

- a) the test method used with a reference to this document;
- b) all information necessary for the complete identification of the sample;
- c) date of sampling and sampling procedure (if known);
- d) date when the extraction was finished;
- e) all operating details not specified in this document, or regarded as optional, together with details of any incidents that 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, pp. 1-194, Annex IV, method 8.4

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards-based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

All the data, software and documentation set out in all British Standards and other BSI publications are the property of and copyrighted by BSI, or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI. Details and advice can be obtained from the Copyright & Licensing Department.

Useful Contacts:

Customer Services

Tel: +44 845 086 9001

Email (orders): orders@bsigroup.com

Email (enquiries): cservices@bsigroup.com

Subscriptions

Tel: +44 845 086 9001

Email: subscriptions@bsigroup.com

Knowledge Centre

Tel: +44 20 8996 7004

Email: knowledgecentre@bsigroup.com

Copyright & Licensing

Tel: +44 20 8996 7070

Email: copyright@bsigroup.com



...making excellence a habit.™