INTERNATIONAL STANDARD

ISO 17319

First edition
2015-05-15

Fertilizers and soil conditioners — Determination of water-soluble potassium content — Potassium tetraphenylborate gravimetric method

Matières fertilisantes — Dosage de la teneur en potassium — Méthode gravimétrique au tétraphénylborate de potassium

Reference number
ISO 17319:2015(E)

© ISO 2015



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword ... **iv**

1 Scope ... **1**

2 Normative references ... **1**

3 Principle ... **1**

4 Reagents ... **1**

5 Apparatus and materials ... **2**

6 Test solution ... **2**

7 Procedure ... **2**
7.1 Aliquot portion of test solution ... 2
7.1.1 Procedure in the presence of cyanamide and/or organic materials ... 2
7.1.2 Procedure in the absence of cyanamide and/or organic materials ... 3
7.2 Determination ... 3
7.3 Blank test ... 3
7.4 Periodic quality control ... 3

8 Expression of results ... **3**
8.1 Calculation ... 3
8.2 Precision ... 4
8.2.1 Ring test ... 4
8.2.2 Repeatability, *r* ... *4*
8.2.3 Reproducibility, *R* ... *4*

9 Test report ... **4**

Annex A (informative) **Report of Method Accuracy** ... **5**

Annex B (informative) **Interlaboratory testing** ... **13**

Bibliography ... **19**

© ISO 2015 – All rights reserved

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 134, *Fertilizers and soil conditioners.*

© ISO 2015 – All rights reserved

Fertilizers and soil conditioners — Determination of water-soluble potassium content — Potassium tetraphenylborate gravimetric method

1 Scope

This International Standard specifies a gravimetric method for the determination of the water-soluble potassium content of test solutions of fertilizers. It is suitable for use in arbitration and for reference purposes.

This International Standard is applicable to those fertilizers containing more than 1,0 % K_2O or equivalent amount of K content.

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.

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 5317, *Fertilizers — Determination of water-soluble potassium content — Preparation of the test solution*

3 Principle

Precipitation of potassium ions present in an aliquot portion of the test solution (previously treated with bromine water and activated charcoal if cyanamide and/or organic materials are present) by sodium tetraphenylborate in a weakly alkaline medium in the presence of disodium ethylenediamine-tetraacetatedihydrate (EDTA disodium salt) to eliminate interference by ammonium ions and other metal cations.

Filtration of the precipitate, drying and weighing.

4 Reagents

WARNING — Sodium hydroxide is corrosive, bromine is corrosive, oxidative and toxic. The related operations shall be performed in fume hood. This standard does not point out all possible safety problems, and the user shall bear the responsibility to take proper safety and health measures, and ensure the operations compliant with the conditions stipulated by the related laws and regulations of the state.

During the analysis, use only reagents of recognized analytical grade, and water conforming to grade 3 of ISO 3696:1987

4.1 Sodium tetraphenylborate, approximately 15 g/L solution.

Dissolve 7,5 g of sodium tetraphenylborate [$NaB(C_6H_5)_4$] in 480 ml of water. Add 2 ml of the sodium hydroxide solution (4.4) and 20 ml of a 100 gram/litre (g/L) solution of magnesium chloride hexahydrate ($MgCl_2{\cdot}6H_2O$). Stir for 15 min and filter through the filter paper (5.2).

This solution may be stored in a plastics bottle for not longer than 1 month. Filter immediately before use.

© ISO 2015 – All rights reserved