

Methods of test for Desiccants —

Part 8: Estimation of ammonia and ammonium compounds content

NOTE It is recommended that this Part be read in conjunction with BS 3482-1 "*Sampling, and preparation and storage of test samples*" which is issued separately.

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Chemicals Standards Policy Committee (CIC/-) to Technical Committee CIC/2, upon which the following bodies were represented:

- Chemical Industries Association
- Ministry of Defence
- Royal Society of Chemistry
- Society of British Aerospace Companies Limited
- Society of Environmental Engineers

This British Standard, having been prepared under the direction of the Chemicals Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 July 1991

© BSI 10-1999

The following BSI references relate to the work on this standard:
Committee reference CIC/2
Draft for comment 90/55568 DC

ISBN 0 580 19709 3

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Method A. Nessler method	1
3 Method B. Nessler method with Rochelle salt	1
Publication(s) referred to	Inside back cover

Foreword

This Part of BS 3482 has been prepared under the direction of the Chemicals Standards Policy Committee. This revision of BS 3482 comprises Part 1, which describes procedures for sampling and preparation and storage of test samples and a number of Parts describing methods of test for desiccants. This revision supersedes BS 3482:1962 which is withdrawn. It differs from BS 3482:1962 in that individual methods have been published in separate Parts and have been generally updated. Some additional methods not included in BS 3482:1962 have also been incorporated.

This Part of BS 3482 also supersedes the methods given in Appendix C of BS 2540:1960 and Appendix C of BS 2541:1960 which are withdrawn.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 and 2, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 3482 describes two pass/fail methods for the estimation of the level of ammonia and ammonium compounds in desiccants. Method A is for general use and method B is for use where precipitation of interfering hydroxides is likely.

NOTE 1 The desiccant product standards specify which of the methods is to be used

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Method A. Nessler method

2.1 Principle

Filtered aqueous extract and an ammonia standard solution are treated with Nessler's reagent. The intensities of the colours produced are compared to give a pass/fail result.

2.2 Reagents

2.2.1 General. During the analysis use only reagents of recognized analytical grade and water complying with grade 3 of BS 3978.

2.2.2 Nessler's reagent, commercially available or prepared as follows.

Dissolve 3.5 g of potassium iodide and 1.25 g of mercury(II) chloride in 80 mL of water contained in a 500 mL glass flask. Add a cold saturated aqueous solution of mercury(II) chloride, stirring constantly, until a slight red precipitate remains, then add 12 g of sodium hydroxide. Allow this to dissolve, add a little more of the saturated mercury(II) chloride solution until a slight turbidity is obtained and dilute with 100 mL of water. Allow to settle, decant and store in the dark.

2.2.3 Standard ammonia and ammonium compounds solution. Freshly prepare a 0.031 g/L solution of ammonium chloride.

2.3 Apparatus

2.3.1 Ordinary laboratory apparatus

2.3.2 A matched pair of 100 mL Nessler tubes

2.3.3 Graduated pipettes, complying with BS 700.

2.4 Procedure

2.4.1 Sample test portion

Measure 25 mL of the filtered aqueous extract (see clause 3 of BS 3482-1:1991) into one of the Nessler tubes (3.3.2) and dilute to 50 mL with water.

2.4.2 Standard solution test portion

Transfer 2.5 mL of the standard ammonia and ammonium compounds solution (2.2.3) using the graduated pipette (2.3.3) into the other Nessler tube (2.3.2) and dilute to 50 mL with water.

2.4.3 Determination

Add 1 mL of the Nessler's reagent (2.2.2) to each test portion (2.4.1 and 2.4.2), mix well and allow to stand for 10 min. Stand both tubes on a white background and, looking down through the solution, compare the intensities of the colours.

2.5 Expression of results

The test is recorded as pass or fail depending upon the relative strengths of the colours.

Record PASS if the colour of the standard solution (2.4.2) is more intense than the sample solution (2.4.1).

Record FAIL if the colour of the standard solution (2.4.2) is less intense than the sample solution (2.4.1).

2.6 Test report

The test report shall include the following information.

- A complete identification of the sample.
- A reference to this British Standard method, i.e. method A of BS 3482-8:1991.
- The results, expressed in accordance with 2.5.
- Any unusual features noted during the estimation.

3 Method B. Nessler method with Rochelle salt

3.1 Principle

Filtered aqueous extract and an ammonia standard solution are treated with Nessler's reagent and potassium sodium tartrate. The intensities of the colours produced are compared to give a pass/fail result.

3.2 Reagents

3.2.1 General. During the analysis, use only reagents of recognized analytical grade and water complying with Grade 3 of BS 3978.

3.2.2 Nessler's reagent, commercially available or prepared as in 2.2.2.

3.2.3 Potassium sodium tartrate, 50 % (m/m) solution.

3.2.4 Standard ammonia and ammonium compounds solution. Prepare as in 2.2.3.

3.3 Apparatus

3.3.1 Ordinary laboratory apparatus

3.3.2 A matched pair of 100 mL Nessler tubes

3.3.3 Graduated pipette, complying with BS 700.

3.4 Procedure

3.4.1 *Sample test portion*

Measure 25 mL of the filtered aqueous extract (see clause 3 of BS 3482-1:1991) into one of the Nessler tubes (3.3.2) and dilute to 50 mL with water.

3.4.2 *Standard solution test portion*

Transfer 2.5 mL of the standard ammonia and ammonium compounds solution (3.2.4) using the graduated pipette (3.3.3) into the other Nessler tubes (3.3.2) and dilute to 50 mL with water.

3.4.3 *Determination*

Add 1 mL of the Nessler's reagent (3.2.2) and 1 mL of the potassium sodium tartrate solution (3.2.3) to each test portion (3.4.1 and 3.4.2) mix well and allow to stand for 10 min. Stand both tubes on a white background and, looking down through the solutions, compare the intensities of the colours.

3.5 Expression of results

The test is recorded as pass or fail depending upon the relative strengths of the colours.

Record PASS if the colour of the standard solution (3.4.2) is more intense than the sample solution (3.4.1).

Record FAIL if the colour of the standard solution (3.4.2) is less intense than the sample solution (3.4.1).

3.6 Test report

The test report shall include the following information.

- a) A complete identification of the sample.
- b) A reference to this British Standard method, i.e. method B of BS 3482-8:1991.
- c) The results, expressed in accordance with 3.5.
- d) Any unusual features noted during the estimation.

Publication(s) referred to

BS 700, *Graduated pipettes*.

BS 3482, *Methods of test for desiccants*.

BS 3482-1, *Sampling, and preparation and storage of samples*.

BS 3978, *Specification for water for laboratory use*.

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. 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.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

If permission is granted, the terms may include royalty payments or a licensing agreement. Details and advice can be obtained from the Copyright Manager. Tel: 020 8996 7070.