

Methods of test for

**Phosphoric acid
(orthophosphoric acid)
for industrial use —**

Part 2: Determination of iron content

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/37, upon which the following bodies were represented:

Association of Public Analysts
 British Coal Corporation
 Chemical Industries Association
 Department of Trade and Industry (Laboratory of the Government Chemist)
 Fertiliser Manufacturers' Association Ltd.
 Institute of Trading Standards Administration
 Ministry of Agriculture, Fisheries and Food
 Ministry of Defence

This British Standard, having been prepared under the direction of the Chemicals Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 29 September 1989

© BSI 02-2000

First published January 1968
 First revision September 1989

The following BSI references relate to the work on this standard:
 Committee reference CIC/37
 Draft for comment 88/51187 DC

ISBN 0 580 17366 6

Amendments issued since publication

Amd. No.	Date of issue	Comments

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
<hr/>	
1 Scope	1
2 Principle	1
3 Reagents	1
4 Apparatus	1
5 Procedure	1
6 Calculation and expression of results	1
7 Test report	1
<hr/>	
Publications referred to	Inside back cover
<hr/>	

Foreword

This Part of BS 4258 has been prepared under the direction of the Chemicals Standards Policy Committee to provide methods for the analysis of phosphoric acid (orthophosphoric acid) for industrial use. This Part supersedes BS 4285-2:1968, which is withdrawn, and from which it differs by making substantial reference to BS 6337-3, possession of which is essential, and by using 1,10-phenanthroline for formation of the coloured complex rather than 2,2'-bipyridyl. This Part includes a procedure for the preparation of a test solution suitable for subsequent treatment and determination of iron content in accordance with the general method of BS 6337-3 which reflects current practice in technique and presentation.

This Part of BS 4258 is related to ISO/R 849, from which it differs in the same way as from BS 4258-2:1968.

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 4258 describes a spectrometric method for determination of the iron content of phosphoric acid (orthophosphoric acid) for industrial use. It is applicable to products having an iron content of not lower than 20 mg/kg.

NOTE 1 A reduced lower limit for applicability cannot be quoted for this method because of the risk of interference of phosphate in the development of colour (see clause 2 of BS 6337-3:1983).

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

2 Principle

The principle is described in clause 3 of BS 6337-3:1983.

3 Reagents

The reagents described in clause 4 of BS 6337-3:1983 and water complying with grade 3 of BS 3978 are required.

4 Apparatus

4.1 General. The apparatus described in clause 5 of BS 6337-3:1983, together with the following, is required.

4.2 One-mark volumetric flask, 100 mL, complying with BS 1792, class B.

5 Procedure

5.1 Test portion and preparation of the test solution

Weigh, to the nearest 0.0001 g, a test portion of approximately 1 g. Transfer quantitatively to the volumetric flask (4.2) and add 10 mL of the hydrochloric acid (see 4.1 of BS 6337-3:1983). Dilute to the mark with water and mix well.

NOTE It is recommended that reference be made to the information on sampling given in BS 4258-12.

5.2 Determination

Take an aliquot portion of the test solution not exceeding 50 mL in volume and not containing more than 500 µg of iron (expressed as Fe). Determine the iron content of this aliquot portion by following the procedure described in clause 6 of BS 6337-3:1983.

6 Calculation and expression of results

Calculate the mass of iron in the aliquot portion of the test solution in accordance with clause 7 of BS 6337-3:1983. The iron content, expressed as milligrams of iron (Fe) per kilogram, is given by the following expression:

$$\frac{M_1 - M_2}{M_0} \times \frac{100}{V}$$

where

M_0 is the mass of the test portion (see 5.1) (in g);

M_1 is the mass of iron found in the aliquot portion of the test solution (see 5.2) (in µg);

M_2 is the mass of iron found in the aliquot portion of the blank test solution (see 6.2 of BS 6337-3:1983) (in µg);

V is the volume of the aliquot portion of the test solution (see 5.2) (in mL).

7 Test report

The test report shall include the following information:

- a) a complete identification of the sample;
- b) a reference to this British Standard, i.e. BS 4258-2:1989;
- c) the results expressed in accordance with clause 6;
- d) details of any unusual features noted during the determination;
- e) any operation not included in this British Standard or regarded as optional.

Publications referred to

BS 1792, *Specification for one-mark volumetric flasks.*

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

BS 4258, *Methods of test for phosphoric acid (orthophosphoric acid) for industrial use.*

BS 4258-12, *Guide to sampling techniques.*

BS 6337, *General methods of chemical analysis.*

BS 6337-3, *Method for determination of iron content (1,10-phenanthroline spectrophotometric method).*

ISO/R 849, *Phosphoric acid for industrial use — Determination of iron content — 2,2'-Bipyridyl spectrophotometric method¹⁾.*

¹⁾ Referred to in the foreword only.

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.