

Methods of test for

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

**Part 3: Determination of sulphate  
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 10-1999

First published September 1975  
 First revision September 1989

The following BSI references relate to the work on this standard:  
 Committee reference CIC/25  
 Draft for comment 87/53564 DC

ISBN 0 580 17054 3

## 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 This Part supersedes BS 4258-3:1975, which is withdrawn, and from which it differs by making substantial reference to BS 6337-1, possession of which is essential. This Part includes a procedure for the preparation of a test portion suitable for subsequent treatment and determination of sulphate content in accordance with the general method which reflects current practice in technique and presentation.

This Part is closely related to ISO 2997, from which it differs in the same way as from BS 4258-3:1975.

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 method for determination of the sulphate content of phosphoric acid (orthophosphoric acid) for industrial use. The method is applicable to products having sulphate contents of between 1 mg/kg and 4 000 mg/kg.

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

## 2 Principle

The principle is described in clause 3 of BS 6337-1:1983.

## 3 Reagents

The reagents described in clause 4 of BS 6337-1:1983 and water complying with grade 3 of BS 3978 are required.

## 4 Apparatus

The apparatus described in clause 5 of BS 6337-1:1983 is required.

## 5 Procedure

### 5.1 Test portion

Weigh, to the nearest 0.001 g, a test portion of between 0.2 g and 5.0 g, depending on the expected sulphate content, such that it contains between 4.5 µg and 450 µg of sulphate, expressed as SO<sub>4</sub>, and not more than 2 mL of water.

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

### 5.2 Determination

Determine the sulphate content of the test portion by following the procedure described in clause 6 of BS 6337-1:1983, using the whole of the test portion.

## 6 Calculation and expression of results

The sulphate content, expressed as milligrams of sulphate (SO<sub>4</sub>) per kilogram, is given by the following expression:

$$\frac{(V_1 - V_0) \times c \times 0.096 \times 10^6}{m}$$

where

$V_1$  is the volume of the reagent used to titrate the hydrogen sulphide released during the determination (see 5.2) (in mL);

$V_0$  is the volume of the reagent used to titrate the hydrogen sulphide released during the blank test (see 6.4 of BS 6337-1:1983) (in mL);

$c$  is the concentration of titrant (4.7 or 4.8 of BS 6337-1:1983) (in mol/L);

0.096 is the mass of sulphate, as SO<sub>4</sub>, corresponding to 1.000 mL of titrant,  $c = 1.000$  mol/L;

$m$  is the mass of the test portion (5.1) (in g).

## 7 Test report

The test report shall include the following information:

- a complete identification of the sample;
- a reference to this British Standard, i.e. BS 4258-3:1989;
- the results expressed in accordance with clause 6;
- details of any unusual features noted during the determination;
- any operation not included in this British Standard or regarded as optional.



---

## Publications referred to

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 6337-1, *Method for determination of traces of sulphur compounds by reduction and titrimetry.*

ISO 2997, *Phosphoric acid for industrial use — Determination of sulphate content — Method by reduction and titrimetry*<sup>1)</sup>.

---

<sup>1)</sup> 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.