

Chemicals used for treatment of water intended for human consumption — Phosphoric acid

The European Standard EN 974 : 1997 has the status of a
British Standard

ICS 71.100.80

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

National foreword

This British Standard is the English language version of EN 974 : 1997.

The UK participation in its preparation was entrusted to Technical Committee CII/59, Chemicals for drinking water treatment, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled 'International Standards Correspondence Index', or by using the 'Find' facility of the BSI Standards Electronic Catalogue.

The United Kingdom voted against the acceptance of this standard at the Formal Vote stage. The UK objections related to changes introduced after the CEN Enquiry stage and were as follows.

- a) The instructions given in **5.1.1** and **5.1.2** were intended for the sampling of non-hazardous liquid products and are not suitable for sampling hazardous products such as concentrated phosphoric acid. The sampling of phosphoric acid is described in detail in ISO 4285, to which reference is already made. The instructions in **5.1.1** and **5.1.2** contradict those in ISO 4285 and are completely inappropriate.
- b) In **5.2.3.1** and **5.2.3.2.1** reference is made to ISO 6353-1 General Method 29 for the determination of certain toxic substances. However, General Method 29 does not give any details of the procedure to determine any of these elements (by atomic absorption spectroscopy) and the references to it are therefore very confusing. The necessary procedure is described in **5.2.3.2.2**.

It is the strong recommendation of the BSI technical committee that sampling is carried out in accordance with ISO 4285.

Additional information

Article 8 of the Council of the European Community Directive 80/778/EEC relating to the quality of water intended for human consumption requires Member States to ensure that substances used in the preparation of drinking water do not cause any contravention of the maximum admissible concentrations prescribed in annex 1 to the Directive.

This requirement is given effect in England and Wales by regulation 25 of the Water Supply (Water Quality) Regulations 1989 (similar provisions apply in Scotland and Northern Ireland). Regulation 25 makes provision for attaching conditions of use to chemicals which are authorized for use in public water supplies.

Details of conditions of use are contained in the Secretary of State's *List of Approved Products* published by the Drinking Water Inspectorate, Room B153, Romney House, 43 Marsham Street, London SW1P 3PY.

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, the EN title page, pages 2 to 12, an inside back cover and a back cover.

Amendments issued since publication

Amd. No.	Date	Text affected

This British Standard, having been prepared under the direction of the Sector Board for Materials and Chemicals, was published under the authority of the Standards Board and comes into effect on 15 December 1997

© BSI 1997

ISBN 0 580 28648 7

ICS 71.100.81

Descriptors: Potable water, water treatment, chemical compounds, phosphoric acid, description, physical properties, chemical properties, impurities, toxic substances, tests, labelling, storage

English version

Chemicals used for treatment of water intended for human consumption — Phosphoric acid

Produits chimiques utilisés pour le traitement de
l'eau destinée à la consommation humaine —
Acide phosphorique

Produkte zur Aufbereitung von Wasser für den
menschlichen Gebrauch —
Phosphorsäure

This European Standard was approved by CEN on 1997-07-05. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

© 1997 CEN — All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 164, Water supply, the Secretariat of which is held by AFNOR.

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 January 1998, and conflicting national standards shall be withdrawn at the latest by January 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Contents

	Page
Foreword	2
Introduction	3
1 Scope	3
2 Normative references	3
3 Description	3
3.1 Identification	3
3.2 Commercial forms	3
3.3 Physical properties	3
3.4 Chemical properties	4
4 Purity criteria	4
4.1 Composition of commercial product	4
4.2 Impurities and main by-products	4
4.3 Toxic substances	4
5 Test methods	5
5.1 Sampling	5
5.2 Analyses	5
6 Labelling — Transportation — Storage	8
6.1 Means of delivery	8
6.2 Risk and safety labelling according to the EU Directives	9
6.3 Transportation regulations and labelling	9
6.4 Marking	9
6.5 Storage	9
Annex A (informative) General information on phosphoric acid	10
Annex B (informative) Determination of concentration by measurement of density	10
Annex C (informative) Bibliography	12

Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this standard:

- 1) this standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- 2) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

1 Scope

This European Standard is applicable to phosphoric acid used for treatment of water intended for human consumption. It describes the characteristics and specifies the requirements and the corresponding test methods for phosphoric acid. It gives information on its use in water treatment.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN ISO 3696	<i>Water for analytical laboratory use — Specification and test methods</i> (ISO 3696 : 1987)
ISO 3165	<i>Sampling of chemical products for industrial use — Safety in sampling</i>
ISO 3706	<i>Phosphoric acid for industrial use (including foodstuffs) — Determination of total phosphorus (V) oxide content — Quinoline phosphomolybdate gravimetric method</i>
ISO 4285	<i>Phosphoric acid for industrial use — Guide to sampling techniques</i>
ISO 5993	<i>Sodium hydroxide for industrial use — Determination of mercury content — Flameless atomic absorption spectrometric method</i>

ISO 6206	<i>Chemical products for industrial use — Sampling — Vocabulary</i>
ISO 6353-1	<i>Reagents for chemical analysis — Part 1 : General test methods</i>
ISO 6353-2	<i>Reagents for chemical analysis — Part 2 : Specifications — First series</i>

3 Description

3.1 Identification

3.1.1 Chemical name

Phosphoric acid.

3.1.2 Synonym or common name

Orthophosphoric acid.

3.1.3 Relative molecular mass

98.

3.1.4 Empirical formula

H₃PO₄.

3.1.5 Chemical formula

H₃PO₄.

3.1.6 CAS Registry Number¹⁾

7664-38-2.

3.1.7 EINECS reference²⁾

231-633-2.

3.2 Commercial forms

Phosphoric acid is supplied as a concentrated solution, the usual concentrations being 75 % (m/m), 80 % (m/m) or 85 % (m/m) of phosphoric acid.

3.3 Physical properties

3.3.1 Appearance

The product is a clear syrupy liquid.

3.3.2 Density

1,57 g/ml at 20 °C for phosphoric acid concentration of 75 % (m/m).

1,69 g/ml at 20 °C for phosphoric acid concentration of 85 % (m/m).

3.3.3 Solubility in water

Miscible at all concentrations.

3.3.4 Vapour pressure

Below 3 Pa³⁾ at 20 °C.

3.3.5 Boiling point at 100 kPa³⁾

135 °C for phosphoric acid concentration of 75 % (m/m).

158 °C for phosphoric acid concentration of 85 % (m/m).

¹⁾ Chemical Abstracts Service Registry Number.

²⁾ European Inventory of Existing Commercial Chemical Substances.

³⁾ 100 Pa = 1 mbar.
100 kPa = 1 bar.