Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

BRITISH STANDARD

BS EN ISO
3071:2006

Textiles — Determination of pH of aqueous extract

The European Standard EN ISO 3071:2006 has the status of a British Standard

ICS 59.080.01

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

BSI
British Standards

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

National foreword

This British Standard is the official English language version of EN ISO 3071:2006. It is identical with ISO 3071:2005. It supersedes BS EN 1413:1998 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee TCI/80, Textiles — Chemical testing, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep 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 Catalogue* under the section entitled "International Standards Correspondence Index", or by using the "Search" facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its 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, the EN ISO title page, the EN ISO foreword page, the ISO title page, pages ii to v, a blank page, pages 1 to 4, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2006

© BSI

ISBN 0 580 47998 6

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 3071

March 2006

ICS 59.080.01

Supersedes EN 1413:1998

English Version

Textiles — Determination of pH of aqueous extract (ISO 3071:2005)

Textiles — Détermination du pH de l'extrait aqueux (ISO 3071:2005)

Textilien — Bestimmung des pH des wässrigen Extraktes (ISO 3071:2005)

This European Standard was approved by CEN on 3 February 2006.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

© 2006 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN ISO 3071:2006: E

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

Foreword

The text of ISO 3071:2005 has been prepared by Technical Committee ISO/TC 38 "Textiles" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 3071:2006 by Technical Committee CEN/TC 248 "Textiles and textile products", the secretariat of which is held by BSI.

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 September 2006, and conflicting national standards shall be withdrawn at the latest by September 2006.

This document supersedes EN 1413:1998.

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

Endorsement notice

The text of ISO 3071:2005 has been approved by CEN as EN ISO 3071:2006 without any modifications.

INTERNATIONAL STANDARD

ISO 3071

Third edition
2005-06-15

Textiles — Determination of pH of aqueous extract

Textiles — Détermination du pH de l'extrait aqueux

Reference number
ISO 3071:2005(E)

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

=:

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

Contents

Page

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 3071 was prepared by Technical Committee ISO/TC 38, *Textiles*.

This third edition cancels and replaces the second edition (ISO 3071:1980), which has been technically revised.

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

Introduction

The pH-value of the aqueous extract of a textile affords a useful index to its processing history. In addition, it is becoming more common to demand that the textile, in its various forms, conforms to certain limits in respect of its acidity or alkalinity, often expressed in terms of the pH-value of the aqueous extract.

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

blank

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

Textiles — Determination of pH of aqueous extract

1 Scope

This International Standard specifies a method for determining the pH of the aqueous extract of textiles. The method is applicable to textiles in any form.

2 Normative references

The following referenced documents are indispensable for the application of this document. 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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
pH
co-logarithm of the hydrogen ion concentration in an aqueous extract

4 Principle

The pH-value of an aqueous extract of a textile is measured electrometrically at room temperature by means of a glass electrode.

5 Reagents

All reagents used shall be of recognized analytical grade.

5.1 Distilled or deionized water, of at least grade 3 as defined in ISO 3696, having a pH between 5,0 and 7,5.

The pH shall be verified the first time the water is used. If it is not within the specified range, the water shall be redistilled using chemically resistant glassware. Acid or organic matter can be removed by distilling water from a solution of 1 g/l potassium permanganate and 4 g/l sodium hydroxide. Alkalinity (e.g. the presence of ammonia) can be removed by distilling the water from a solution of dilute sulfuric acid. If the distilled water is not grade 3, boil 100 ml of distilled water in a beaker at a moderate rate for (10 ± 1) min and allow the covered beaker to cool to room temperature.

5.2 Potassium chloride solution, 0,1 mol/l, prepared using distilled or deionized water (5.1).

5.3 Buffer solutions, which may be prepared as specified in Annex A, having a pH similar to that being determined, for calibration of the pH-meter before measurement. Buffer solutions having a pH around 4, 7 or 9 are recommended.

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

6 Apparatus

6.1 Stoppered glass or polypropylene flasks, chemically resistant, for preparation of the aqueous extract.

NOTE It is recommended that the glassware used for this test be set aside for this purpose only and filled with distilled water between tests.

6.2 Mechanical shaker, providing rotational or reciprocating movement sufficient to obtain a ready exchange of liquid between the interior of the textile material and the solution used in preparing the extract. A to-and-fro movement at a rate of 60 min^{-1} or a rotational frequency of 30 min^{-1} has been found satisfactory.

6.3 Beakers, chemically resistant, with a capacity of 150 ml (see Note to 6.1).

6.4 Rods, chemically resistant (see Note to 6.1).

6.5 pH-meter, with a glass electrode, capable of measuring to at least 0,1 pH-units.

6.6 Balance, accurate to 0,01 g.

6.7 1 l volumetric flasks, of grade A quality.

7 Preparation of test samples

7.1 Take a laboratory sample representative of the bulk of the textile material and sufficient to provide all the test samples required. Cut the laboratory sample into pieces having approximately 5 mm sides or of such a size as to allow the test samples to wet out rapidly.

7.2 To avoid contamination, handle the material as little as possible. Take from the laboratory sample three test samples of (2,00 $\pm$ 0,05) g each.

8 Procedure

8.1 Preparation of the aqueous extract

Prepare the extract in triplicate at room temperature, as follows:

Place each test sample and 100 ml of extracting solution [either water (5.1) or potassium chloride solution (5.2)] into a stoppered flask (6.1). Agitate the flask for a short period by hand to ensure that the textile material is properly wetted out, then shake it mechanically for 2 h $\pm$ 5 min.

Record the temperature of the extracting solution used.

8.2 Measurement of the pH of the aqueous extract

Calibrate the pH-meter at the temperature of the extract to be measured. Check the calibration of the pH-meter using two buffer solutions.

Immerse the electrode several times in the same solution (water or KCl solution) used to prepare the extract until the indicated pH-value stabilizes.

Decant the first extract into a beaker, immediately immerse the electrode to a depth of at least 10 mm and stir gently with a rod until the pH-value stabilizes (do not record the pH-value of this solution).

Decant the second extract into another beaker, immediately immerse the electrode, without washing, in the beaker to a depth of at least 10 mm and allow to stand without stirring until the pH-value stabilizes. Record this value.

© ISO 2005 – All rights reserved

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

Decant the third extract into another beaker, immediately immerse the electrode, without washing, in the beaker to a depth of at least 10 mm and allow to stand without stirring until the pH-value stabilizes. Record this value.

Record the pH-values of the second and third extracts as the first and second measurements.

9 Calculation

If the difference between the two pH-values, expressed to the nearest 0,1 pH-units, is greater than 0,2, repeat the procedure with other test samples. When two valid measurements have been obtained, calculate the mean value.

10 Precision

Interlaboratory trials were carried out between nine laboratories measuring seven samples. Statistical analysis was carried out and the following results were obtained:

Using water (5.1) as the extracting solution: Reproducibility limit $R = 1{,}7$ pH-units;

Using KCl solution (5.2) as the extracting solution: Reproducibility limit $R = 1{,}1$ pH-units.

NOTE The statistical analysis was carried out in accordance with ISO 5725-2, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*.

11 Test report

The test report shall include the following information:

a) a reference to this International Standard, i.e. ISO 3071;

b) the mean pH-value, to the nearest 0,1 pH-units;

c) the type of solution used (water or KCl solution);

d) the pH of the extracting solution;

e) the temperature of the extracting solution;

f) any factor likely to have had an effect on the results, including any resistance to wetting out of the test samples

g) the date of the determination.

Annex A
(informative)

Preparation of standard buffer solutions

A.1 General

Use only reagents of recognized analytical reagent grade. Prepare the buffer solutions using water of at least grade 3 as defined in ISO 3696 and renew them at least once a month.

A.2 pH 4,0 potassium hydrogen phthalate solution (0,05 mol/l)

Dissolve 10,21 g of potassium hydrogen phthalate ($KHC_8H_4O_4$) in distilled or deionized water in a 1 l volumetric flask and dilute to the mark. The pH of this solution is 4,00 at 20 °C and 4,01 at 25 °C.

A.3 pH 6,9 potassium dihydrogen orthophosphate and disodium hydrogen orthophosphate solution (0,08 mol/l)

Dissolve 3,9 g of potassium dihydrogen orthophosphate (KH_2PO_4) and 3,54 g of disodium hydrogen orthophosphate (Na_2HPO_4) in distilled or deionized water in a 1 l volumetric flask and dilute to the mark.

The pH of this solution is 6,87 at 20 °C and 6,86 at 25 °C.

A.4 pH 9,2 disodium tetraborate solution (0,01 mol/l)

Dissolve 3,80 g of disodium tetraborate decahydrate ($Na_2B_40_7 \cdot 10H_2O$) in distilled or deionized water in a 1 l volumetric flask and dilute to the mark. The pH of this solution is 9,23 at 20 °C and 9,18 at 25 °C.

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

blank

Licensed Copy: MIT Library, MIT Libraries, Fri May 11 01:35:47 GMT+00:00 2007, Uncontrolled Copy, (c) BSI

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: +44 (0)20 8996 9000. Fax: +44 (0)20 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: +44 (0)20 8996 9001. Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at http://www.bsi-global.com.

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: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

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: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001. Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at http://www.bsi-global.com/bsonline.

Further information about BSI is available on the BSI website at http://www.bsi-global.com.

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.

Details and advice can be obtained from the Copyright & Licensing Manager. Tel: +44 (0)20 8996 7070. Fax: +44 (0)20 8996 7553. Email: copyright@bsi-global.com.

BSI
389 Chiswick High Road
London
W4 4AL