

Methods of test for
Elastic fabrics

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Textiles and Clothing Standards Policy Committee (TCM/-) to Technical Committee TCM/24, upon which the following bodies were represented:

Association of Consulting Scientists
 British Nonwovens Manufacturers' Association
 British Polyolefin Textiles Association
 British Textile Confederation
 British Textile Machinery Association
 British Textile Technology Group
 British Throwsters Association
 Confederation of British Wool Textiles Limited
 Furniture Industry Research Association
 International Wool Secretariat
 Ministry of Defence
 North East Lancashire Textile Manufacturers' Association
 SATRA Footwear Technology Centre
 Soap and Detergent Industry Association
 Society of Dyers and Colourists
 Textile Finishers' Association
 Textile Institute

This British Standard, having been prepared under the direction of the Textiles and Clothing Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 March 1992

© BSI 01-1999

First published October 1973
 Second edition March 1992

The following BSI references relate to the work on this standard:
 Committee reference TCM/24
 Draft for comment 90/46489 DC

ISBN 0 580 20491 X

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
<hr/>	
Section 1. General	
1.1 Scope	1
1.2 Definitions	1
1.3 Apparatus	1
1.4 Test specimens	1
1.5 Conditioning and testing	4
1.6 Properties to be tested in accordance with existing British Standards	4
<hr/>	
Section 2. Test methods	
2.1 Determination of extension at a specified force	5
2.2 Determination of modulus	5
2.3 Determination of tension decay	5
2.4 Determination of residual extension	6
2.5 Method for fatiguing specimens	6
2.6 Determination of fatigue set	7
2.7 Determination of elastomeric thread breaks	7
2.8 Determination of runback	7
2.9 Method for ageing specimens	8
<hr/>	
Figure 1 — Line contact clamps	2
Figure 2 — Loop assembly clamps	2
Figure 3 — Looped specimen	3
<hr/>	
Publication(s) referred to	Inside back cover
<hr/>	

Foreword

This British Standard has been prepared under the direction of the Textiles and Clothing Standards Policy Committee. It supersedes BS 4952:1973 and BS 4294:1968 which are withdrawn.

The principal changes introduced by this revision are that this edition of BS 4952 uses a similar format to BS 5441 and lists properties which can be tested in accordance with existing British Standards. The test procedures have been brought up-to-date by deleting test variants that are no longer in use and the retained techniques have been refined. The standard also includes provisions for testing looped specimens in addition to straight specimens.

Methods already published as British Standards have not been reproduced, but a list is given, in 1.6, of other test methods that can be of use in the assessment of elastic fabrics.

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 to 8, 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.

Section 1. General

1.1 Scope

This British Standard describes methods of test specific to both narrow and wide elastic fabrics. The test methods are applicable to woven and to warp knitted and weft knitted fabrics but certain tests can also be applicable to stretch fabrics which are obtained by the use of elastomeric bulked yarns or by a process such as slack mercerization.

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

1.2 Definitions

For the purposes of this British Standard the following definitions apply.

1.2.1

elastic fabrics

fabrics, which incorporate elastomeric threads

1.2.2

elastomer

a macromolecular material which returns rapidly to approximately its initial dimensions and shape after substantial deformation by a weak stress and release of stress

1.2.3

modulus

the tensile force in the test specimen required to produce a specified elongation

1.3 Apparatus

1.3.1 Metal scale, graduated in millimetres.

1.3.2 Autographic constant rate-of-extension stress/strain apparatus (unless otherwise indicated in the particular test procedure) capable of cycling between zero extension and either a predetermined force or a predetermined extension and capable of maintaining a specimen either under a constant tension or at a constant elongation.

The apparatus shall be provided with means for recording the extension of the test specimen and the corresponding force. It shall be equipped with either line contact clamps for straight specimens (see **1.3.3.2**) or loop assembly clamps (see **1.3.3.3**).

1.3.3 Clamps

1.3.3.1 General

The central points of the two clamps shall be in the line of pull and the testing device shall be calibrated with the clamps in position.

The clamps shall be capable of allowing the specimens to be maintained either at a constant elongation or under a constant force as appropriate for the test to be performed.

1.3.3.2 Line contact clamps

Line contact clamps as shown in Figure 1 shall consist of two jaws, one being a flat steel plate, the other having a convex 3 mm radius. The line of contact of the jaws shall be at right angles to the line of pull, and their clamping faces shall be in the same plane. The jaws shall be capable of holding the test specimen without allowing it to slip, shall be designed so that they do not cut or otherwise weaken the specimen and shall be not less than the width of the specimen.

1.3.3.3 Loop assembly clamps

Loop assembly clamps shall be as shown in Figure 2 and shall essentially comprise two removable steel bars of circular cross section and 4 mm in diameter, around which the specimen passes and by which it is extended as the bars move apart. The axes of the bars shall be at right angles to the line of pull and shall be in the same plane.

1.3.3.4 Gauge length and specimen length under extension

In the case of line contact clamps, the gauge length and the length of the extended test specimen at any time is measured as the distance between the lines of contact of the two jaws.

Where specimen length is to be measured after removal of the specimen from the jaws, the gauge length marks shall be drawn on the specimen before it is inserted into the clamps.

NOTE The method of marking should be such as to prevent damage to the specimen.

In the case of loop assembly jaws, the gauge length is measured as the circumference around the loop bars.

1.4 Test specimens

1.4.1 General

Take samples of fabric from which test specimens will be cut to represent the fabric under test.

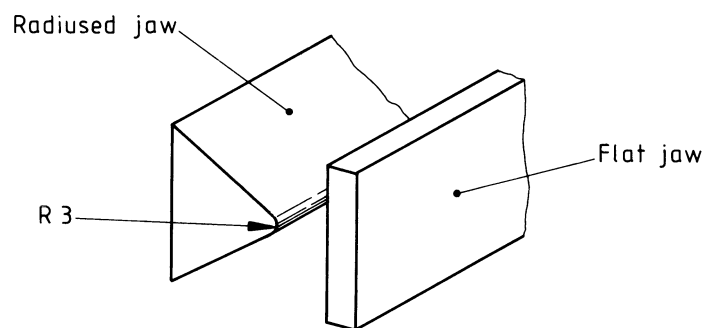
Prepare the specimens according to whether machine direction or cross direction stretch of the fabric is to be tested. Where possible test at least five specimens in each direction.

1.4.2 Preparation of specimens

1.4.2.1 General

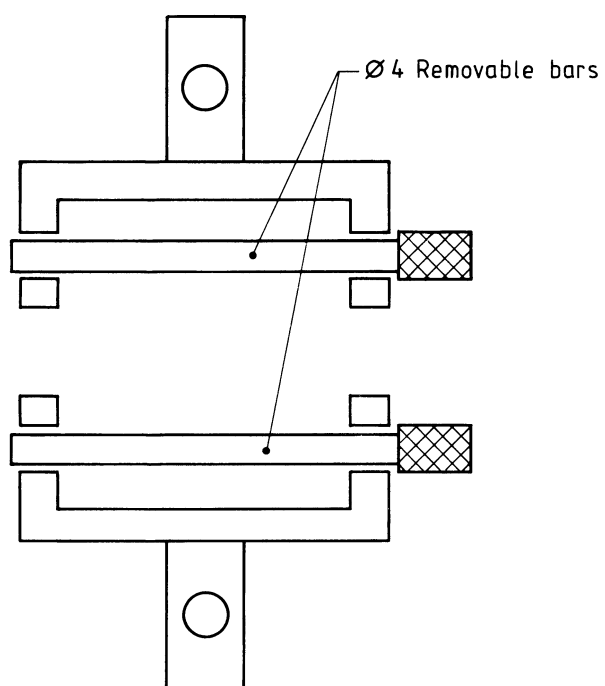
Prepare specimens in accordance with **1.4.2.2** to **1.4.2.5** as appropriate.

NOTE Straight specimens and looped specimens do not necessarily give the same results.



Dimension is in millimetres

Figure 1 — Line contact clamps



Dimension is in millimetres

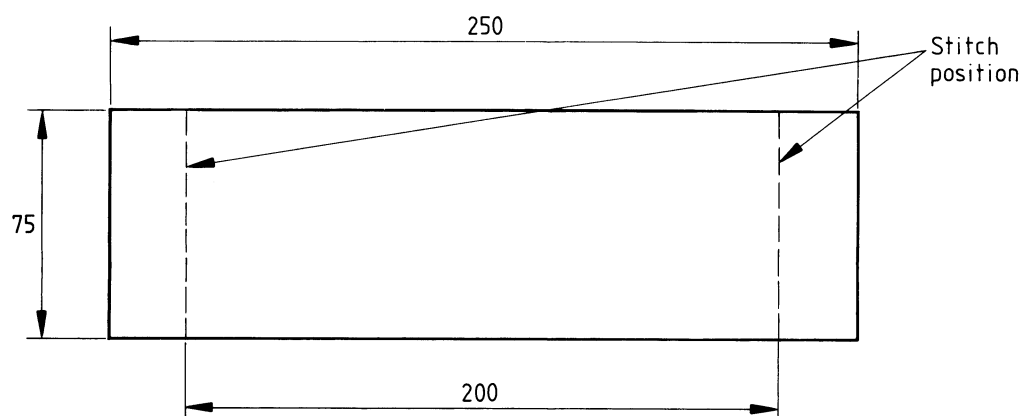
Figure 2 — Loop assembly clamps

1.4.2.2 Straight specimens

Fabrics 50 mm and below in width shall be tested full width in a lengthwise direction. For fabrics greater than 50 mm in width, specimens 50 mm wide, excluding any fringe, shall be prepared such that they are of sufficient length to provide a nominal gauge length of 100 mm.

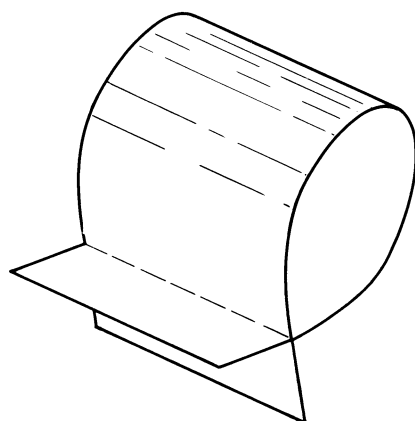
1.4.2.3 Looped specimens

Fabrics 75 mm and below in width shall be tested full width in a lengthwise direction. For fabrics greater than 75 mm in width, specimens 75 mm wide, excluding any fringe shall be prepared of length 250 mm. Mark a line 25 mm from each end, parallel to the short dimension [see Figure 3(a)]. Fold the specimen in half parallel to the short dimension and, starting in the centre of the line, sew along the line to form the strip into a loop, turning at the edge without breaking the threads, returning along the same line to the other edge and turning again to finish in the centre [see Figure 3(b)]. The stitch, sewing thread and stitch density shall be such as to withstand the testing forces, i.e. to prevent the specimen opening on extending.



All dimensions are in millimetres

(a) Looped specimens as cut from fabric



(b) Looped specimen as prepared for testing

Figure 3 — Looped specimen

1.4.2.4 *Specimens of woven fabric*

For fabrics liable to fray during testing, cut specimens 25 mm wider than the required testing width and fray them down by removing excess threads in approximately equal numbers from each of the longer edges of the cut strip until the width of the specimen is as specified in 1.4.2.2 or 1.4.2.3.

1.4.2.5 *Specimens of weft knitted fabrics*

Prevent the cut edges of weft knitted test specimens from laddering by a method which will neither restrict the extension and retraction of the fabric, nor alter its stress/strain characteristics to any significant extent.

NOTE In some cases it is possible to use an expandable seam, or alternatively the cut edges could be sealed with a light application of latex adhesive followed, when the latex is dry, by a dusting of talc to prevent sticking.

1.5 Conditioning and testing

1.5.1 Atmosphere

Conditioning and testing shall be carried out in the standard temperate atmosphere for testing textiles as defined in BS 1051, i.e. a temperature of 20 ± 2 °C and relative humidity of 65 ± 2 %.

1.5.2 Conditioning of samples

Condition the samples from which the test specimens are to be taken for a period of not less than 16 h in a free, unrestrained state in the standard temperate atmosphere for testing textiles (see 1.5.1).

In cases of dispute, precondition the test specimens for 4 h at a relative humidity not exceeding 10 % at a temperature not greater than 52 °C. An oven at 52 °C under ordinary room conditions will give the required low humidity. Then expose the test specimens to the standard temperate atmosphere for testing textiles (see 1.5.1) for at least 24 h before testing in, and without removal from, this atmosphere.

1.6 Properties to be tested in accordance with existing British Standards

A number of properties of elastic fabrics can be tested in accordance with other appropriate British Standards, which include the following.

BS 1006:E03 at an active chlorine concentration of 100 mg/L for determination of colour fastness to swimming-bath water.

BS 1930 for determination of width of woven or knitted fabrics when relaxed at zero tension.

BS 2471 for determination of mass per unit length and mass per unit area.

BS 2862 for determination of number of threads per unit length.

BS 4323 for determination of dimensional change of fabrics induced by free steam.

BS 5441 for determination of wales and courses per unit length in knitted fabrics.

BS 5807 for determination of dimensional change on domestic laundering.

Section 2. Test methods

2.1 Determination of extension at a specified force

2.1.1 Apparatus

Use apparatus as described in 1.3.2 and 1.3.3.

2.1.2 Procedure

2.1.2.1 *Straight specimens*

Set the clamps of the tensile testing machine to 100 mm apart. Clamp a test specimen centrally in the stationary clamp so that its longitudinal axis passes through the centre points of the front edges of the jaws.

Either:

- a) apply a pre-tension of 2 N; or
- b) slack-mount the specimen, with any extension that occurs prior to the force reaching the pre-tension level (as indicated on an autographic recording) being considered as part of the slack, ultimately to be added to the gauge length.

Clamp the free end of the test specimen in the second clamp.

Set the rate of extension and retraction of the specimen to 500 mm/min. Cycle the specimen twice between zero extension and the specified force. Record, from the force versus extension graph produced, the elongation at the specified force on the second cycle.

2.1.2.2 *Looped specimens*

Set the gauge length such that the circumference around the loop bars is 200 mm.

Slide the loop bars open in order to position the looped specimen, after which, close the bars.

Adjust the position of the specimen around the bars so that the seam lies midway between the bars.

Set the rate of extension and retraction of the specimen to 500 mm/min. Cycle the specimen twice between zero extension and the specified force. Record, from the force versus extension graph produced, the elongation at the specified force on the second cycle.

2.1.3 Test report

The following shall be reported:

- a) specified force used;
- b) percentage elongation for each specimen and their arithmetic mean;
- c) direction of test of the fabric, i.e. either machine direction or cross direction;
- d) specimen type, i.e. whether straight or looped;
- e) specimen width.

2.2 Determination of modulus

2.2.1 Apparatus

Use apparatus as described in 1.3.2 and 1.3.3.

2.2.2 Procedure

Read from the force versus extension curves as described in 2.1, the force on the extension and/or recovery curves on the second cycle, at intervals of elongation as arranged between the interested parties.

2.2.3 Test report

The following shall be reported:

- a) modulus, i.e. force (in N) at each value of elongation where readings have been taken, the value of each elongation at which modulus reading has been taken and whether these were from the extension or retraction portion of the cycle, and their arithmetic mean;
- b) direction of test of the fabric, i.e. either machine direction or cross direction;
- c) specimen type, whether straight or looped;
- d) specimen width.

2.3 Determination of tension decay

2.3.1 Principle

The test specimen is stretched to a specified elongation and the tension recorded. The elongation is maintained for 5 min during which the decay of tension over this period is determined.

2.3.2 Apparatus

Use apparatus as described in 1.3.2 and 1.3.3.2.

2.3.3 Test specimens

Straight specimens as described in 1.4.2.2 shall be used.

2.3.4 Procedure

The rate of extension and retraction shall be 500 mm/min. Set the separation of the clamps to give a specimen gauge length L_1 of 100 mm. Mount the test specimen in such a way that it is straight and untensioned. Set the cycling controls to cycle between zero extension and a force of either 5.0 N/cm or 10.0 N/cm as agreed between interested parties. After cycling twice to this force, and without a pause, extend the specimen at the specified rate, to the specified elongation and record the maximum force. Maintain the specimen at this elongation for 5 min after which time again record the force.

The tension decay, expressed as a percentage of the maximum force, is calculated from the equation:

$$\text{Tension decay} = 100 (F_0 - F_t) / F_0$$

where

F_0 is the maximum force (in N) at the specific elongation; and

F_t is the force (in N) after 5 min.

2.3.5 Test report

The following shall be reported:

- a) cycling force;
- b) specified elongation to which the specimens have been subjected and the resulting (maximum) force in the specimen;
- c) percentage tension decay for each specimen and their arithmetic mean;
- d) direction of test of the fabric, i.e. whether machine direction or cross direction;
- e) specimen width.

2.4 Determination of residual extension

2.4.1 Apparatus

Use apparatus as described in 1.3.2 and 1.3.3.2.

2.4.2 Test specimens

Straight specimens as described in 1.4.2.2 shall be used.

2.4.3 Procedure

Carry out the test as described in 2.1, except on the second cycle maintain the specified force for 10 ± 2 s. Return the clamps to their original position such that the force is gradually reduced to zero within a period of 7.5 ± 2.5 s.

Remove the specimen from the clamps, immediately place it on a flat, smooth surface and, after a period of 1 ± 0.1 min from the time when the clamps were returned to their original position, measure the distance between the outside edges of the gauge marks (L_2).

If the determination of residual extension after a longer period of relaxation is required, the distance between the gauge marks shall be measured after total relaxation time of 30 ± 1 min (L_3).

L_2 and L_3 shall be measured to the nearest 1 mm.

NOTE When tests are made at right angles to the wale direction of weft knitted fabrics, the results are invalid if laddering occurs. When elastomeric threads are laid-in, precautions should be taken to prevent slippage of these threads through the fabric.

2.4.4 Calculation and expression of results

2.4.4.1 Calculate the arithmetic mean values of L_2 and of L_3 in each direction separately for the five specimens. These are denoted by \bar{L}_2 and \bar{L}_3 respectively.

2.4.4.2 Calculate the mean residual extension, expressed as a percentage, after 1 min (R_1) for the fabric in each direction from the equation:

$$R_1 = 100 (\bar{L}_2 - L_t) / L_1$$

where L_1 is the initial gauge length (in mm).

2.4.4.3 If required, calculate the mean residual extension, expressed as a percentage, after 30 min (R_{30}) for the fabric in each direction from the equation:

$$R_{30} = 100 (\bar{L}_3 - L_1) / L_1$$

2.4.4.4 The mean values of R_1 and R_{30} shall be quoted to the nearest 1 %.

2.4.4.5 Calculate the arithmetic mean of the maximum values of the force applied in each direction separately for the five specimens.

2.4.5 Test report

The following shall be reported:

- a) mean value of the maximum force applied;
- b) value of the mean extension of the fabric in each direction;
- c) value of the mean residual extension of the fabric in each direction after 1 min relaxation;
- d) if required, value of the mean residual extension after 30 min relaxation;
- e) direction of test of the fabric, i.e. either machine direction or cross direction;
- f) specimen width.

2.5 Method for fatiguing specimens

2.5.1 Principle

This method is designed to standardize the procedure for fatiguing specimens of elastic fabric. Specimens are subjected to an agreed number of cycles of elongation and retraction, so that appropriate properties can be measured and compared with the corresponding properties of the unfatigued specimens. For certain properties, e.g. elongation and modulus, appropriate gauge marks shall be made on the specimen to be fatigued and these same marks used in subsequent testing, irrespective of any change in length during the fatigue procedure.

2.5.2 Apparatus

2.5.2.1 Fatiguing apparatus, consisting of one or more pairs of clamps, with mechanical means for moving one clamp (reciprocating clamp) at a rate of 60 ± 1 cycles per minute with means for recording the number of cycles.

Each pair of clamps shall be set so that the specimens are alternately stretched and relaxed. The movement of the reciprocating clamp shall be adjustable between 50 mm and 250 mm. The position of the stationary clamp shall be adjustable to give an effective length to be fatigued of 125 mm, irrespective of amplitude of reciprocation.

2.5.3 Test specimens

Straight specimens as described in 1.4.2.2 shall be used except that specimens shall be cut parallel to the general direction of the elastomeric threads and that the length shall be such that the effective length to be fatigued is 125 mm. Make gauge marks centrally 100 mm apart on each specimen.

The number of specimens to be subjected to the fatigue test shall be appropriate to the tests subsequently intended to be applied.

2.5.4 Procedure

Adjust the reciprocating clamp to give a fatigue-cycle elongation equal to 80 % of the mean elongation as determined by using the procedure described in 2.1. Adjust the stationary clamp to give a length between the clamps of 125 mm. Mount each specimen so that it is at zero tension but not slack in the clamps. Fatigue each specimen at the specified rate. The number of fatiguing cycles shall be agreed between the interested parties.

NOTE It is recommended that the number of fatiguing cycles be in multiples of 5 000.

Remove the specimens from the apparatus and allow them to relax for 30 ± 1 min before remeasuring the relevant properties as required after fatiguing.

2.5.5 Test report

In addition to reporting the results of the relevant tests on fatigued specimens, the number of fatiguing cycles used and the fatigue cycling elongation shall be stated.

2.6 Determination of fatigue set

2.6.1 Apparatus

Use apparatus as described in 1.3.1 and 2.5.2.

2.6.2 Test specimens

Prepare the test specimens as described in 2.5.3.

2.6.3 Procedure

Mount each test specimen with the gauge marks positioned centrally between the clamps. Subject each specimen to the fatiguing procedure described in 2.5.4 for the agreed number of cycles, after which remove the specimen from the clamps and lie it on a smooth flat surface. Allow it to relax for 30 ± 1 min. Measure the distance between the gauge marks to the nearest millimetre. Calculate the percentage increase in length to the nearest 1 %.

2.6.4 Test report

The following shall be reported:

- a) number of fatiguing cycles;
- b) number of specimens tested;
- c) fatigue extension;
- d) fatigue set as the mean percentage increase in length;
- e) specimen width where less than 50 mm.

2.7 Determination of elastomeric thread breaks

2.7.1 Apparatus

Use apparatus as described in 2.5.2.

2.7.2 Test specimens

Prepare the test specimens as described in 2.5.3.

2.7.3 Procedure

Subject each specimen to the fatiguing procedure described in 2.5.4 for the agreed number of cycles. Remove the specimen from the clamps and count the number of elastomeric thread breaks, if any, within the area of fabric between the gauge marks.

2.7.4 Test report

The following shall be reported:

- a) number of breaks for each individual specimen;
- b) number of fatiguing cycles;
- c) specimen width where less than 50 mm.

2.8 Determination of runback

2.8.1 Apparatus

Use apparatus as described in 2.5.2.

2.8.2 Test specimens

Prepare the test specimens as described in 2.5.3. At a position midway between the gauge marks, entirely cut through three elastomeric threads. With certain fabrics, it could be necessary to cut the associated covering and/or structural threads also. This is permissible provided that the cutting through of these threads does not result in laddering or fraying. The three elastomeric threads shall be uniformly spaced across the fabric at intervals of 12.5 mm.

NOTE For fabrics less than 50 mm in width, the number of elastomeric threads to be cut through in any one specimen will depend on the width of the fabric and the total number of elastomeric threads it contains. Not more than approximately 10 % of the elastomeric threads should be cut through.

2.8.3 Procedure

Mount each specimen with the gauge marks centrally between the clamps. Subject each specimen to the fatiguing procedure described in 2.5.4 for 5 000 cycles. Remove the specimens from the clamps and lay them on a smooth fiat surface. Allow them to relax for 30 min. Measure the distance between the two cut ends of each elastomeric thread to the nearest millimetre. This is the runback distance.

2.8.4 Test report

The following shall be reported:

- a) mean runback distance in millimetres;
- b) number of threads cut;
- c) number of specimens tested;
- d) specimen width where less than 50 mm.

2.9 Method for ageing specimens

2.9.1 Principle

This ageing procedure is designed to accelerate the oxidative deterioration of elastic fabrics which occurs with the passage of time. Specimens are aged by a prescribed heating treatment in air and are afterwards submitted to any of the preceding tests to determine the effect on their properties.

NOTE Accelerated ageing tests do not truly reproduce under all circumstances the changes produced by natural ageing.

2.9.2 Apparatus

2.9.2.1 Ventilated oven, in which there is slow circulation of air, providing not less than three, nor more than 10, air changes per hour.

The incoming air shall be within ± 2 °C of the temperature specified before coming into contact with the test specimens. No copper or copper alloy shall be within the ageing chamber of the oven. The total volume of the test specimens shall not exceed 10 % of the free air space of the oven. Means shall be provided for suspending the test specimens within the oven such that they are not within 10 mm of each other nor within 50 mm of the inner surfaces of the oven. Means shall be provided for maintaining an atmosphere within the oven at a temperature of 70 ± 1 °C. Any direct heat and/or light radiation on to the test specimens shall be avoided. Means shall be provided for the introduction of temperature-measuring instruments, at a suitable point, for measuring the operating conditions.

2.9.3 Test specimens

2.9.3.1 Dimensions

The dimensions of the test specimens shall be chosen so that they are suitable for any subsequent tests to be conducted.

2.9.3.2 Quantity

The number of test specimens selected shall be as required by the particular physical test intended to be carried out after the ageing procedure.

NOTE It is recommended that in any event the number of test specimens chosen for post ageing comparisons should be not less than five.

2.9.4 Procedure

Preheat the oven to the operating temperature of 70 ± 1 °C. Suspend the test specimens in the ageing chamber, ensuring that the volume of the specimens does not exceed 10 % of the air space of the oven and that the air circulates freely on both sides of each specimen.

Allow the specimens to remain under these conditions for a period agreed between the interested parties.

NOTE 1 It is recommended that specimens be aged for 1, 3, 7 and 10 days and thereafter in multiples of 7 days from the start of the test.

NOTE 2 The test period used should be such that deterioration of the test specimens will not be so great as to prevent determination of the final values of the relevant physical property after ageing.

NOTE 3 The rate of change in physical characteristics of materials such as those considered in this British Standard has been found to approximately double with each 10 °C rise in temperature, e.g. 1 day at 70 °C is approximately equal to 32 days at 120 °C.

After removing the test specimens from the oven, condition them as specified in 1.5 for not less than 16 h or more than 24 h.

2.9.5 Test report

In addition to reporting the results of the appropriate tests on aged specimens, the number of days for which the specimens have been aged shall be stated.

Publication(s) referred to

BS 1006, *Methods of test for colour fastness of textiles and leather.*

BS 1051, *Glossary of terms relating to the conditioning, testing and mass determination of textiles.*

BS 1930, *Methods for determination of width of woven or knitted fabrics when relaxed at zero tension.*

BS 2471, *Methods of test for textiles — woven fabrics — determination of mass per unit length and mass per unit area.*

BS 2862, *Methods for determination of number of threads per unit length.*

BS 4323, *Method for determination of dimensional change of fabrics induced by free steam.*

BS 5441, *Methods of test for knitted fabrics.*

BS 5807, *Method for determination of dimensional change of textiles in domestic washing and drying.*

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.