METHODS OF TEST FOR FLEXIBLE CELLULAR MATERIALS

BS 4443 : 1969

£1.5s

Price 6/- net

BRITISH STANDARDS INSTITUTION
Incorporated by Royal Charter
British Standards House, 2 Park St., London, W1Y 4AA
Telegrams: Standards London W1 Telephone: 01-629 9000

THIS BRITISH STANDARD, having been approved by the Plastics and Rubber Industry Standards Committees, was published under the authority of the Executive Board on 15th May, 1969.

SBN: 580 05198 6

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 5000, fully indexed and with a note of the contents of each, will be found in the British Standards Yearbook, price 20s. The BS Yearbook may be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standard:

BS 1610. Methods for the load verification of testing machines.
BS 903. Methods of testing vulcanized rubber, Parts F1 to F9 : 1956, 'Methods of testing soft cellular rubber'.
BS 3667. Methods of testing flexible polyurethane foam.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

The following BSI references relate to the work on this standard:
Committee reference PLC/RUC/4
Draft for comment 68/1981 and 68/5219

CO-OPERATING ORGANIZATIONS

The Plastics and Rubber Industry Standards Committees, under whose supervision this British Standard was prepared, consist of representatives from the following Government departments and scientific and industrial organizations:

Board of Trade
British Electrical and Allied Manufacturers' Association
*British Plastics Federation
*British Rubber Manufacturers Association
Electrical Research Association
Engineering Equipment Users Association
Institution of the Rubber Industry
*Ministry of Defence, Army Department
Ministry of Defence, Navy Department
Ministry of Public Building and Works
*Ministry of Technology
Natural Rubber Bureau
Natural Rubber Producers Research Association
Oil Companies Materials Association
Plastics Institute
Post Office
Royal Institute of British Architects
Royal Institute of Public Health & Hygiene
*Rubber and Plastics Research Association of Great Britain
Rubber Growers' Association
*Society of Motor Manufacturers and Traders Limited
Surface Coating Synthetic Resin Manufacturers Association

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

British Cellular Rubber and Plastics Manufacturers Association
British Latex Foam Manufacturers Association
British Railways Board
Expanded Polystyrene Product Manufacturers Association
Furniture Industry Research Association
National Bedding Federation
Research Association for the Paper and Board, Printing and Packaging Industries (PIRA)
Society of British Aerospace Companies Limited

BRITISH STANDARD METHODS OF TEST FOR

FLEXIBLE CELLULAR MATERIALS

FOREWORD

This British Standard has been prepared under the authority of the Plastics Industry Standards Committee and the Rubber Industry Standards Committee.

The methods of test given in this standard are those which are being considered by Technical Committee ISO/TC 45 of the International Organization for Standardization (ISO) and are intended, where applicable, to replace those published in BS 903 : Parts F1 to F9* and BS 3667†.

METHODS

0. SCOPE

This British Standard describes methods of test which are intended to apply to cellular products of polymeric origin.

METHOD 1. MEASUREMENT OF DIMENSIONS OF TEST PIECES

1.1 Introduction. This method lays down procedures for the measurement of test piece dimensions of cellular materials. An accurate measurement of the thickness is the basis for accurate values of various properties of cellular materials, such as density, tensile strength, tear resistance and compression set, etc.

Pressure from the measuring instrument will have an influence on the measurement of the thickness of soft flexible materials. Therefore it is necessary to specify the pressure for accurate comparative measurements in the laboratory as described in Method A.

The selection of measuring tools and the best possible accuracy are dependent on the thickness of the cellular material and on the type of test piece. The thicknesses occurring in practical work are covered in the 3 methods A, B and C.

1.2 Method A. The dimension shall be measured by means of a gauge having a circular foot 14·4 mm–16·0 mm in radius exerting a pressure of $1{\cdot}0 \pm 0{\cdot}1$ mbar‡.

* BS 903, ' Methods of testing vulcanized rubber ', Parts F1 to F9 : 1956, ' Methods of testing soft cellular rubber '.

† BS 3667, ' Methods of testing flexible polyurethane foam '.

‡ 1 mbar = 10^2N/m^2.

The gauge should read to the nearest 0·02 mm and the mean of 3 readings at different positions shall be taken. It will be appropriate to mount the measuring device on a solid plane base plate*.

The circular foot of the device shall not extend over the edge of the test piece area.

A suitable type of instrument and its method of operation is described in Appendix A.

1.2.1 For control measurements in production, and for comparative measurements between the customer and the supplier, use of the alternative procedures given in 1.2.2 and 1.2.3 may be made by special agreement, and shall be stated in any test report.

1.2.2 Commercial measuring apparatus working with spring pressures does not necessarily satisfy the conditions in Method A. Therefore apparatus applying foot pressures of between 1 mbar and 5 mbar and having pressure feet up to 20 cm^2 in area may be used for materials obviously not influenced by the increased foot pressure.

1.2.3 When the circular foot overlaps the test area, vernier calipers reading to an accuracy of 0·1 mm may be used. The technique given in 1.3 shall be employed. The preferable alternative is to measure by means of the method in 1.2 the thickness of the material in the area from which the test piece is to be cut.

1.3 Method B. Alternative method for dimensions over 30 mm. The dimension shall be measured by means of vernier calipers reading to an accuracy of 0·25 mm. Each measurement shall be taken along a line perpendicular to the opposing faces of the piece. The previously set caliper gauge shall be presented to the test piece, which is supported, so that the dimension to be measured is not stressed. The correct setting shall be the one when the measuring faces of the gauge touch the surfaces of the test piece without compressing it.

The mean of 3 readings at different positions shall be taken.

1.4 Method C. Alternative method for dimensions over 100 mm. The dimension shall be measured by means of a rule reading to an accuracy of 1·0 mm. Each measurement shall be taken along a line perpendicular to the opposing faces of the piece.

The mean of 3 readings at different positions shall be taken.

* Apparatuses which meet the requirements of this clause are commercially available. Details of suppliers can be obtained from the British Standards Institution, 2 Park Street, London, W.1.

METHOD 2. DETERMINATION OF APPARENT DENSITY

2.1 Introduction. This method lays down the procedure for determining the apparent density of flexible cellular materials.

2.2 Definition. For the purposes of this method the following definition applies:

Apparent density. The mass per unit volume of the cellular material in air, at a stated temperature and relative humidity.

2.3 Apparatus. The apparatus shall consist of the following:

(1) A balance capable of reading to an accuracy of 0·5 % of the sample mass.

(2) Means of measuring the dimensions of the test piece as specified in Method 1.

2.4 Test piece. The test piece shall be of a shape such that its volume can be easily calculated. It shall be cut without permanently deforming the original cell structure of the material.

The test piece shall be at least 100 cm^3, but preferably as large as possible commensurate with the apparatus available and with the shape of the original material. The place from which the test piece is taken and the presence or absence of surface skins shall be recorded.

2.5 Number of test pieces. Three test pieces shall be tested.

2.6 Conditioning. Samples shall not be tested less than 72 h after manufacture. Prior to the test the test pieces shall be stored for at least 16 h in the following standard atmosphere:

20 ± 2 °C, 65 ± 5 % relative humidity.

2.7 Procedure. After conditioning as described in 2.6, the dimensions of the test piece shall be measured as described in Method 1. The measurement of each dimension so obtained shall be used to calculate the volume of the test piece.

The test piece shall then be weighed in grammes to an accuracy of 0·5 %.

2.8 Calculation. The apparent density of the test piece shall be calculated as follows:

$$1000\,\frac{M}{V}\ \text{kg/m}^3, \text{ or alternatively } \frac{M}{V}\ \text{g/cm}^3$$

where M = the mass of the test piece in grammes,

V = the volume of the test piece in cubic centimetres.

2.9 Report. The report shall include the following:

(1) A description of the material.

(2) The conditioning used, if other than the standard atmosphere.

(3) The individual test results stating details of test pieces (shape, dimensions and from where taken).
(4) Whether the test piece had skin or not.
(5) The arithmetic average of apparent densities.

METHOD 3. TESTING OF TENSILE STRENGTH AND ELONGATION AT BREAK

3.1 Introduction. This method describes the procedure for determining the strength and deformation properties of flexible cellular material.

3.2 Definitions. For the purposes of this test the following definitions apply:

(1) *Tensile strength.* The maximum force required to break the test piece divided by its original cross-sectional area.

(2) *Elongation.* The change in the gauge length of the test piece determined at the time of break expressed as a percentage of its original gauge length.

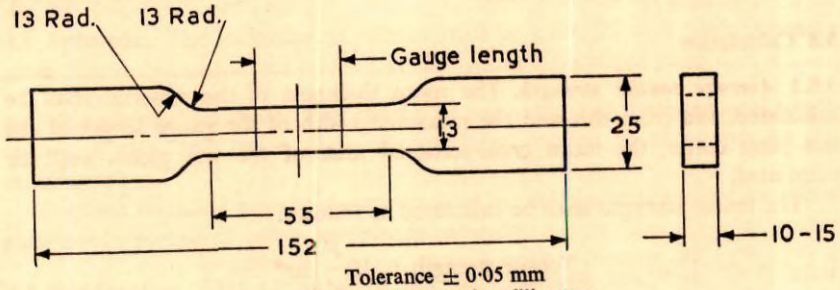
3.3 Apparatus. Tensile tests shall be made on a power driven machine complying with the following requirements:

(1) The rate of travel of the power actuated grip shall be 500 ± 50 mm per min and shall be uniform at all times.

(2) The machine shall comply with the requirements of Grade B of BS 1610*.

3.4 Test piece

3.4.1 ***Direction of sampling: shape and dimensions.*** If the material reveals a predominant direction of the cellular structure (orientation of the cells), the test pieces for the tensile test shall be taken in such a way that their longitudinal axes lie at right angles to this predominant direction. If this is not possible, the location of the longitudinal axis with respect to the predominant direction shall be stated in the test report.



Tolerance ± 0·05 mm
All dimensions are in millimetres

Fig. 1. Test piece

* BS 1610, ' Methods for the load verification of testing machines '.

In general the test piece shall be substantially rectangular in cross section, without surface skin, and without visible defects.

The tensile test pieces shall be cut as shown in Fig. 1 and should be 10–15 mm thick.

3.5 Number of test pieces. Five tensile test pieces shall be tested.

3.6 Conditioning. Samples shall not be tested less than 72 h after manufacture. Prior to the test the test pieces shall be stored for at least 16 h in the following standard atmosphere:

$20 \pm 2\,°C$, $65 \pm 5\,\%$ relative humidity.

3.7 Procedure. After conditioning as described in 3.6, the thickness of the material in the area from which the test pieces are to be cut shall be measured at 5 evenly distributed points. Alternatively 2 measurements may be made in the area from which each test piece is to be cut. These dimensions shall be measured as described in Method 1 and shall not vary by more than $\pm 2\,\%$.

The test pieces shall be cut and marked on their gauge length with 2 reference lines. The marker for these lines shall have 2 parallel marking edges, the inside limits of which shall be at least 25 mm and not more than 50 mm apart.

The test piece shall be placed in the grips of the testing machine described in 3.3, care being taken to adjust it symmetrically, so that the tension will be distributed uniformly over the cross section. The machine shall be started and the maximum force (measured to $\pm 1\,\%$) and the distance between the inside edges of the 2 reference lines (measured to $\pm 1{\cdot}0$ mm) shall be taken immediately prior to the rupture of the test piece. Test pieces which rupture outside the bench marks shall be rejected and replaced by other test pieces.

The test shall be made at the same temperature and humidity as that used for conditioning the test material.

3.8 Calculation

3.8.1 ***Average tensile strength.*** The mean thickness of the material shall be calculated, and from this and the measured width of the gauge length of the test piece cutter, the mean cross-sectional area of the test pieces shall be calculated.

The tensile strength shall be calculated as follows:

$$\text{Tensile strength} = 10\frac{F}{A}\ \text{bar}^*$$

where F = the breaking force in newtons,

A = the initial cross-sectional area in square millimetres.

* 1 bar = 10^5 N/m^2.

The mean of the tensile strength of the test pieces shall be regarded as the tensile strength of the material.

3.8.2 ***Elongation at break.*** Elongation at break shall be calculated as follows:

$$\text{Elongation at break} = \frac{(L_t - L_o) \times 100\ \%}{L_o}$$

where: If L_t = the gauge length at break,
L_o = the initial gauge length.

3.9 Report. The report shall include the following:

(1) The nature of the foam.
(2) The conditioning used.
(3) The location of test pieces in the product.
(4) The location and number of surfaces with skin, if any.
(5) The mean value of the tensile strengths in bars.
(6) The mean value of the elongation at break expressed as a percentage.

METHOD 4. MEASUREMENT OF CELL COUNT

4.1 Introduction. This method lays down the procedure for measuring the cell count of cellular material. It is a method for comparing the cell structure of foam materials.

Due to the variation in individual cell size even in uniform cell structures it is more convenient to report the number of cells per unit length rather than the actual cell size.

4.2 Definition. For the purposes of this test the following definition applies:

Cell count. The number of cells per 25 mm in the cellular material under specified conditions.

4.3 Apparatus. The following apparatus shall be used: 25 mm cloth counting glass.

4.4 Test pieces. Test pieces may consist of any sample of foam material which is free of skin and has a plane surface large enough to accommodate the counting glass.

Surfaces revealing a marked elongation of the cellular structure or striations shall not be measured unless specifically required.

4.5 Conditioning. Test pieces shall not be measured less than 72 h after manufacture. Prior to measurement the test pieces shall be stored for at least 16 h in the following standard atmosphere:

$20 \pm 2\ ^\circ\text{C}$, $65 \pm 5\ \%$ relative humidity.

4.6 Procedure. After conditioning as described in 4.5, the test piece shall be laid on a flat, horizontal surface without strain and the actual number of cells counted against the counting edge of the glass.

Where cell counts along and across the test piece are important, a count shall be made in each direction.

4.7 Report. The report shall include the following:

(1) A description of the material.
(2) The direction in which the count was made.
(3) The number of cells per 25 mm.

METHOD 5. COMPRESSION STRESS-STRAIN CHARACTERISTICS

5.1 Introduction. The compression stress-strain characteristics are a measure of the loadbearing properties of the material. The compression stress-strain characteristics differ from the indentation hardness characteristic which is known to be influenced by:

(1) the thickness of the material under test;
(2) the tensile properties of the material under test;
(3) the shape of the compression plate or test piece;
(4) the size of the test piece.

This test method covers flexible cellular materials which have different properties and which require different test procedures for determining the compression stress-strain characteristics. Two methods are detailed below.

5.2 Definition. For the purposes of this method the following definition applies:

Compression stress-strain characteristics. The stresses in millibars required to produce, under specified conditions, specified compressions of the material.

5.3 Test piece. The test piece shall be a right parallelepiped with a minimum width : thickness ratio of 2 : 1.

The thickness of the test piece shall be not less than 10 mm, but thin sheets may be plied up to achieve this, such sheets being cut to identical shapes and sizes, provided that a minimum of 10 cell diameters are included in the thickness of any one ply.

The area of the test piece shall be not less than 64 cm^2 and shall be such that at no point does it overlap the compression plate.

5.4 Apparatus. The apparatus shall consist of the testing machine, which shall be capable of compressing the test piece by means of a compression plate moving vertically at a uniform rate of $2{\cdot}5 \pm 0{\cdot}5$ mm/s.

The compression plate shall be maintained parallel to the base plate. The testing machine shall have means of measuring to an accuracy of ± 2 % the force required to produce the specified compression, and of measuring the sample thickness under load to an accuracy of ± 0·1 mm. It shall be capable of maintaining the specified degree of compression for the period specified by the procedure appropriate to the material under test.

The test pieces shall be supported on a smooth, flat, horizontal and rigid surface, larger than the samples, and suitably vented with holes 3–8 mm in diameter, and between 35 mm and 70 mm pitch, to allow the escape of air from below the sample.

The compression plate may be of any convenient size or shape provided that it overlaps the test piece in all directions. The lower surface of the compression plate shall be smooth but not polished.

5.5 Conditioning. Samples shall not be tested less than 72 h after manufacture. They shall be conditioned, immediately before testing, for a period of not less than 16 h at a temperature of 20 ± 2 °C and a relative humidity of 65 ± 5 %. The tests shall be carried out at a temperature of 20 ± 2 °C.

5.6 Procedure

5.6.1 ***Method A***

5.6.1.1 *Procedure.* The dimensions of the test piece shall be measured using a suitable method described in Method 1 and the area calculated.

The test piece shall then be inserted in the test machine and shall be compressed at the specified rate, by means of the compression plate, to produce a compression of 70 ± 1 % of the test piece thickness. The compression plate shall then be raised at the specified rate until clear of the test piece. This procedure shall then be repeated immediately. The test piece shall then be compressed at the specified rate and the force required to produce 25 ± 1 %, 40 ± 1 %, 50 ± 1 % and 65 ± 1 % compression on the original thickness determined, either by simultaneous reading of the force and deflection at the required compressions or preferably from an autographic record of the stress-strain curve. The force shall then be removed.

The compression stress-strain characteristics shall be calculated at the prescribed levels of compression by the following formula:

$$CS = \frac{F}{A} 10^4$$

where CS = compression stress-strain characteristics in millibars,
F = force in newtons,
A = area of test piece in square millimetres.

If repeat tests on the same test piece are required, a recovery period of 6 h shall be allowed before retesting.

5.6.1.2 *Report.* The report shall state the following:

(1) The dimensions of the test piece used.
(2) The identity of the material.
(3) The stress-strain characteristics.
(4) The method used, i.e. BS 4443, Method 5A.

5.6.2 ***Method B***

5.6.2.1 *Procedure.* The dimensions of the test piece shall be measured using a suitable method described in Method 1 and the area calculated.

The test piece shall then be inserted in the test machine and shall be compressed at the specified rate, by means of the compression plate, to produce a compression of 25 ± 1 % of the test piece thickness. The deflection is then maintained for 60 ± 5 s and the force measured. The force shall then be removed.

The compression stress-strain characteristics shall be calculated by the following formula:

$$CS = \frac{F}{A} 10^4$$

where CS = compression stress-strain characteristics in millibars,
F = force in newtons,
A = area of test piece in square millimetres.

If repeat tests on the same test piece are required, a recovery period of 6 h shall be allowed before retesting.

5.6.2.2 *Report.* The report shall state the following:

(1) The dimensions of the test piece used.
(2) The identity of the material.
(3) The stress-strain characteristics.
(4) The method used, i.e. BS 4443, Method 5B.

METHOD 6. COMPRESSION SET

6.1 Introduction. This test consists of maintaining the test piece under specified conditions of time, temperature and constant compressive strain and noting the effect on the height of the released test piece.

6.2 Definition. For the purposes of this method the following definition applies:

Compression set. The difference between the initial height and the final height of a test piece of the cellular material after compression for a given time and temperature and recovery time, expressed as a percentage of the initial height.

6.3 Apparatus. The following apparatus shall be used:

(1) A compression device, which shall consist of 2 flat plates larger in dimensions, than the test pieces with spacers and clamps such that the plates are held parallel to each other and the space between the plates is adjustable to the required deflected height.

(2) Means of measuring the dimensions of the test piece in accordance with Method 1.

6.4 Test pieces. Test pieces shall have parallel top and bottom surfaces and essentially vertical sides. The dimensions shall be 50 mm long by 50 mm wide by 25 mm thick. All test pieces shall be cut so as to be representative of the material.

When it is not possible to cut test pieces of the thickness specified, thinner sections not less than 10 mm may be used. The results so obtained may not be comparable with those obtained using the standard thickness.

6.5 Number of test pieces. Five test pieces shall be tested.

6.6 Conditioning. Samples shall not be tested less than 72 h after manufacture. Prior to the test the test pieces shall be stored for at least 16 h at a temperature of 20 ± 2 °C and a relative humidity of 65 ± 5 %.

6.7 Procedure. The test may be carried out by either Method A or Method B or both. The result obtained by Method A may not be the same as that obtained by Method B.

After conditioning as described in 6.6, the initial thickness of the test piece shall be measured as described in Method 1. The test piece shall be placed in the compression device and compressed by either 50 % or 75 % of its thickness and maintained under this condition.

NOTE. In special cases a compression of 25 % or 90 % may be agreed upon.

6.7.1 ***Method A.*** Within 15 min, the compressed test piece shall be placed in an oven with air circulation at 70 ± 1 °C for 22 h.

The test apparatus shall be removed from the oven and within 1 min the test piece removed from the apparatus and placed on a wooden surface. The test piece shall be allowed to recover for 30 min at the same temperature as that used for conditioning the test piece before remeasuring the thickness.

6.7.2 ***Method B.*** The test piece shall be maintained for 72 h under compression at the same temperature as that used for conditioning the test piece. The test piece shall be released from compression and allowed to recover for 30 min before remeasuring the thickness.

BRITISH STANDARDS INSTITUTION

The British Standards Institution was founded in 1901 and incorporated by Royal Charter in 1929.

The principal objects of the Institution as set out in the charter are to co-ordinate the efforts of producers and users for the improvement, standardization and simplification of engineering and industrial materials; to simplify production and distribution; to eliminate the waste of time and material involved in the production of an unnecessary variety of patterns and sizes of articles for one and the same purpose; to set up standards of quality and dimensions, and to promote the general adoption of British Standards.

In carrying out its work the Institution endeavours to ensure adequate representation of all viewpoints. Before embarking on any project it must be satisfied that there is a strong body of opinion in favour of proceeding and that there is a recognized need to be met.

The Institution is a non-profit-making concern. It is financed by subscriptions from members—individuals, companies, technical and trade associations, and other bodies interested in its work, by a Government grant and by the sale of its publications. Membership of the Institution confers a number of specific rights and privileges. The demands on the services of the Institution are steadily increasing and can only be met if continuing and increased support is provided by those who use British Standards.

*Printed in England by Gaylard & Son Ltd, London, S.E.*14

AMD 864

Amendment Slip No. 1, published 11 February, 1972

to BS 4443 : 1969

Methods of test for flexible cellular materials

Revised text

Title. Delete the existing title and substitute the following:

'BS 4443 : Part 1 : 1969

Methods of test for flexible cellular materials

Part 1. Methods 1–6'.

Contents page. Insert the following contents page:

'CONTENTS

Price 20p

Foreword. *Paragraph* 2. Add the following new sentence:

'In Appendix B details are given of the British Standard methods which are now superseded by those published in this standard.'

Add the following new paragraph:

'It is intended to add further parts to this standard as new methods of test are standardized.'

Method 1. Measurement of dimensions of test pieces

Clause 1.2 Method A, *line* 2. Delete, 'pressure of $1{\cdot}0 \pm 0{\cdot}1$ mbar‡' and substitute 'stress of $0{\cdot}1 \pm 0{\cdot}01$ kN/m²'. Delete the footnote '‡1 mbar $= 10^2$ N/m²'.

Method 3. Testing of tensile strength and elongation at break

Clause 3.8.1 Average tensile strength. Delete the existing formula

'Tensile strength $= 10\frac{F}{A}$ bar*

and substitute 'Tensile strength $= 1000\frac{F}{A}$ kN/m²'.

Delete the footnote '*1 bar $= 10^5$ N/m²'.

Method 5. Compression stress-strain characteristics

Clause 5.2 Definition, *line* 2. Delete 'millibars' and substitute 'kilonewtons per square metre'.

5.6.1.1 Delete the existing formula

'$CS = \frac{F}{A}\ 10^4$'

and substitute '$CS = 1000\frac{F}{A}$'

Delete 'millibars' in the first line below the formula and substitute 'kN/m²'.

5.6.2.1 Delete the existing formula

'$CS = \frac{F}{A} 10^4$'

and substitute '$CS = 1000 \frac{F}{A}$'

Delete 'millibars' in the first line below the formula and substitute 'kN/m²'.

Method 6. Compression set

Clause 6.3 Apparatus. Add after the existing paragraph (1) a new sentence as follows:

'For testing thin materials, a requisite number of 50 mm × 50 mm photographic glass mounting slides'.

Clause 6.4 Test pieces. *Paragraph* 2, *line* 3. Delete 'the standard thickness' and substitute '25 mm thickness'.

After the existing second paragraph, add a new paragraph as follows:

'When thin materials are to be tested sufficient test pieces 50 mm long × 50 mm wide shall be taken so that the sum of their thickness before compression is at least 25 mm. The test pieces shall be plied together and interleaved with the photographic mounting slides, and the complete assembly shall be treated during the test as a single thick test piece.'

Clause 6.5 Number of test pieces. Delete the existing text and substitute the following:

'Five test pieces, or, in the case of thin materials, five test assemblies, shall be tested.'

Clause 6.7 Procedure. *Paragraph two, second line.* After the words 'described in Method 1' insert the following:

'In the case of thin materials the thickness of the foam shall be calculated by deducting the aggregate thickness of the glass slides from the measured total thickness of the glass slides and foam. For ease of handling the top and bottom layers of the assembly should be of glass.'

Clause 6.7.1 Method A. *Paragraph* 2. Add the following to the existing text:

'In the case of thin materials, care shall be taken not to disturb the assemblies, and the thickness shall be calculated by deducting the aggregate thickness of the glass slides from the measured total thickness of the glass slides and foam.'

Clause 6.7.2 Method B. Add the following to the existing paragraph:

'In the case of thin materials, care shall be taken not to disturb the assemblies, and the thickness shall be calculated by deducting the aggregate thickness of the glass slides from the measured total thickness of the glass slides and foam.'

Clause 6.9 Report. Delete the text of item (4) and substitute the following:

'The thickness if other than 25 mm, and in the case of thin materials the number of plies used'.

New Appendix. Add the following new Appendix:

'APPENDIX B

METHODS SUPERSEDED BY THIS STANDARD

The following table gives the methods superseded by those published in this standard and the corresponding methods which have replaced them.

Method description	Methods superseded		Replaced by
	BS 903*: Parts F1 to F9	BS 3667†: Parts 3-10	BS 4443: Part 1
Apparent density	Part F3	Part 4	Method 2
Cell count	—	Part 5	Method 4
Compression set	Part F6	Part 7	Method 6
Compression stress-strain	Part F4	—	Method 5
Dimensions of test pieces	Part F2	Part 3	Method 1
Tensile strength and elongation at break	Part F7	Part 6	Method 3

* BS 903, 'Methods of testing vulcanized rubber', Parts F1 to F9, 'Methods of testing soft cellular rubber'.

† BS 3667, 'Methods of testing flexible polyurethane foam', Part 3, 'Dimensions of test pieces', Part 4, 'Apparent density of thin sheet', Part 5, 'Cell count', Part 6, 'Tensile strength and elongation at break of thin sheet', Part 7, 'Compression set of thin sheet', Part 8, 'Solvent swelling', Part 9, 'Humidity ageing', Part 10, 'Heat ageing'.'