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Specification for

**Draughtstrips for the draught
control of existing doors and
windows in housing (including
test methods)**

ICS 91.120.10

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Committees responsible for this British Standard

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- Association for the Conservation of Energy
- Association of Metropolitan Authorities
- British Plastics Federation
- Department of the Environment (Construction Sponsorship Directorate)
- Department of the Environment (Housing and Urban Monitoring and Analysis Directorate)
- Draught Proofing Advisory Association Ltd.
- Energy Action Grants Agency
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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
Specification	
Introduction	1
1 Scope	1
2 References	1
3 Definitions	2
4 Classification	2
5 Test procedures	2
6 Product size and dynamic characteristics	3
7 Set in product under sustained compression/deflection	3
8 Integrity of working section and carrier of draughtstrip	3
9 Adhesion of draughtstrips secured by an adhesive only	3
10 Air leakage through product	3
11 Resistance to wear	4
12 Marking and product information	4
Annexes	
A (normative) Test methods and evaluation	5
B (informative) Advisory notes on the seasonal movement of external doors made of wood	17
C (informative) Advisory notes on materials specification and resistance to weather	17
Tables	
1 Dynamic characteristics of working sections, related to type of doorset or window	3
A.1 Sequence of test methods	5
Figures	
A.1 Product size and dynamic characteristics: compression/deflection force test (typical arrangement)	9
A.2 Mounting block for set in product under sustained compression/deflection test (typical arrangement of equipment)	10
A.3 Method of measuring height of working section (typical arrangement of equipment)	10
A.4 Sliding friction force test (typical arrangement of equipment)	11
A.5 Integrity of working section and carrier test (typical arrangement of equipment)	11
A.6 Test of adhesion of draughtstrips secured by an adhesive only (typical arrangement of equipment)	12
A.7 Air leakage test (typical arrangement of equipment)	13
A.8 Maximum air leakage through product plotted against applied pressure difference	14
A.9 Resistance to wear test (typical arrangement of equipment)	15
List of references	Inside back cover

National foreword

This British Standard has been prepared by Subcommittee B/540/5. It is a revision of BS 7386 : 1990 which is superseded and withdrawn. It principally covers draughtstrip products for the high proportion of existing doors and windows in housing which were not originally designed to take draughtstripping. These doors and windows vary in age and the variations in detail design and manufacture over a long period, combined with wear and tear in service, pose more difficult dimensional requirements than those for products engineered into new doorsets and windows at the production stage, even after allowing for prior repair of the most ill-fitting of existing doors and windows. Products used in new doorsets and windows at the production stage and therefore not included.

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 18, an inside back cover and a back cover.

Specification

Introduction

National surveys on housing (see Building Research Establishment Digest 319) have shown that, when considered by broad door or window type, four categories cover 95 % of the existing doors and windows which were not originally designed for draughtstripping. These are hinged doors in wood, sliding windows in wood and hinged windows in wood and steel.

Amongst any one category, experience has shown that only a small minority of doorsets and windows are of poor fit. The poor fit is usually confined to a minor part of the opening perimeter and, if a draughtstrip does not seal completely at the worst points, its overall effectiveness is unlikely to be markedly impaired.

It is impractical to seek to seal the poor fit of a small minority of a door or window category, or to deal with all the manifold varieties amongst a rare type like a sliding wood door. These are situations where special measures may be needed.

Hence it has been deemed reasonable to base this standard on products to fill the gaps around 90 % of the four categories, without making them hard to close. Products to fill gaps between doorset or window frames and walls, or to fill gaps at any glazing, for which appropriate sealant products should be used, are not included.

Doorsets and windows identical to those in the four common categories can be found in building applications other than housing. Draughtstrip products conforming to this standard could also be suitable for them, given that the conditions in service are comparable with domestic occupation.

It does not follow that draughtstrip products conforming to this standard are unsuitable for other categories of door and window, or for use elsewhere in housing such as at loft hatches. It is also necessary in these categories to consider their ability both to fill the air leakage gaps and to retain an ease of component closing.

Test methods and evaluation are given in annex A. Advisory notes on the seasonal movement of external doors made of wood and on materials specification are given in annex B and annex C respectively.

1 Scope

This British Standard specifies requirements for draughtstrip products to fit the common types of installed doors and windows in housing that were not originally designed to incorporate draughtstripping, and applies to hinged doors in wood, sliding windows in wood, hinged windows in wood and steel and domestic loft hatches.

NOTE. Unless specifically designed as such, draughtstrips conforming to this standard should not be fitted as smoke control seals without the approval of the fire authority, nor should they be fitted to doors with intumescent seals without the prior approval of the manufacturer of the door or consultation with the fire authority.

Gap filling and in-situ gaskets, applied like sealants, are not dynamic products and are excluded from this standard. Letter box seals are excluded from this standard because they do not generally function in the manner of a draughtstrip. Draughtstrip materials specifically designed for use on the bottom of doors are also excluded from this standard.

2 References

2.1 Normative references

This British Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this British Standard only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

2.2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this British Standard, the definitions given in BS 6100 : Subsection 1.3.5 apply together with the following:

3.1 perimeter gap

Air leakage gap remaining between a door leaf or window sash and its frame when the leaf/sash is shut.

3.2 draughtstrip

Product with dynamic characteristics for closing perimeter gaps in particular for retrospective fitting to existing doors and windows that were not originally designed to receive such products.

NOTE. The draughtstrips have to be attached either to the frame or door leaf/window sash and may consist entirely of a working section or the working section may be attached to a carrier.

3.3 size and dynamic characteristics

Attributes of draughtstrip products which enable them to fill a range of gap sizes without undue resistance and follow seasonal changes in gap size. These embrace cross-sectional dimensions and the ability to deflect, compress and recover. Where relevant, they also include an ease of sliding against opposing surfaces.

3.4 code of action

Manner in which a draughtstrip forms a seal, characterized by three basic modes; compression, wiping and sliding.

NOTE. In practice, products are likely to operate in more than one mode of action. For example, a product working in compression on the hinge side of a door may experience some wiping action.

3.5 compression mode

Reduction of working section height by an openable member of a doorset or window, broadly in the direction of local final closure for the member, in order to match the size of the working section to the perimeter gap.

3.6 wiping mode

Reduction of working section height, broadly in a direction perpendicular to that of the local closure motion of an openable member, with the working section (eventually) slipping against the member or doorset or window frame at a size which matches the perimeter gap.

3.7 sliding mode

Similar to wiping mode but with closure (and opening) motion parallel to the axis of a draughtstrip, such that some or all of the working section may remain deflected at a size which matches the perimeter gap.

3.8 working section

Part of the draughtstrip which exhibits the dynamic characteristics.

3.9 carrier

Part of the draughtstrip designed to hold and fix the working section in its operating position.

3.10 test piece

Section of softwood, steel, plastic or other material used to simulate that part of a doorset or window to which a draughtstrip is intended to be attached.

3.11 test surface

Planed softwood surface brush painted with one coat of undercoat paint followed by two coats of gloss finish topcoat paint.

3.12 measurement datum

Any convenient line or plane on the test equipment relative to which the height of a draughtstrip in a mounting block is measured.

4 Classification

Products conforming to this standard shall be classified as follows.

- a) *Class 1.* Products intended for use on poorly fitting external hinged wood doors which have maximum perimeter gaps greater than 2 mm and/or have large seasonal movements (see annex B).

NOTE. An indication of large seasonal movement might be, for example, particular difficulty in operating locks and bolts at the door head and door bottom at certain times of the year.

- b) *Class 2.* Products intended for use on domestic loft hatches and internal or well fitting external hinged wood doors which have maximum perimeter gaps less than 2 mm and have small seasonal movements (see annex B).

NOTE. An indication of small seasonal movement might be, for example, slight difficulty in operating locks and bolts at the door head and door bottom at certain times of the year.

- c) *Class 3.* Products intended for use on hinged wood and steel windows and sliding wood windows.

5 Test procedures

The test procedures and evaluation shall be as described in annex A and the draughtstrip products shall conform to clauses 5 to 10.

6 Product size and dynamic characteristics

NOTE. This requirement is intended to ensure that, when installed as recommended, the draughtstrip products will not make the opening or closing of draughtstripped doorsets and windows unduly difficult.

When tested by the method described in A.2 the load required to compress/deflect the draughtstrip by any amount up to 6 mm or 3 mm as appropriate shall not exceed the maximum resistance shown in table 1.

In addition, products which are designed to operate in a wiping or sliding mode shall be tested by the method described in A.4 and shall have a sliding friction force of no greater than 20 N/m length when compressed by a minimum of 6 mm or 3 mm as appropriate (see table 1).

Table 1. Dynamic characteristics of working sections, related to type of doorset or window (see A.2)		
Application	Minimum deflection range	Maximum resistance anywhere in specified height or deflection range
	mm	N/m
Hinged external doors: class 1 draughtstrips	6	60
Hinged external or internal doors; domestic loft hatches: class 2 draughtstrips	3	60
Windows (all types): class 3 draughtstrips	3	80

7 Set in product under sustained compression/deflection

NOTE. This requirement is intended to ensure suitable resistance of draughtstrip products to a permanent loss in functional height or change of shape arising from sustained pressure.

When tested by the method described in A.3 and subjected to sustained compression/deflection, in the mode in which the product is installed in practice, the mean value of the compression/deflection recovery, i.e. the recovery of functional height from the compressed/deflected state, for each set of 10 specimens tested shall be not less than 55 % of the applied compression/deflection.

8 Integrity of working section and carrier of draughtstrip

NOTE. This requirement is intended to ensure that the working section and carrier of a draughtstrip will neither become detached from each other, nor from the doorset or window when installed as recommended.

When tested and subjected to the sliding and pulling forces described in A.5, the working section of a draughtstrip shall neither become detached from the carrier, nor shall the working section or carrier become detached from the test piece.

9 Adhesion of draughtstrips secured by an adhesive only

NOTE. This requirement is intended to ensure that draughtstrip products without a carrier which are fixed by means of an adhesive only, will resist becoming detached from a doorset or window.

When tested by the method described in A.6, the draughtstrip shall not become totally detached from the test piece during the period in which the weight is applied.

10 Air leakage through product

When tested by the method described in A.7 and when installed in the maximum gap size specified, and compressed/deflected in accordance with the product information, products designed to fit a maximum gap size of 10 mm shall conform to item a); those designed to fit a maximum gap size greater than 10 mm shall conform to item b).

a) The air leakage through the product over a range of applied differential pressures across the specimen from 10 Pa to 100 Pa shall not, at any point, exceed the values shown in graph 1 of figure A.8. The equation of the line in graph 1 of figure A.8 is:

$$Q = 0.13(\Delta p)^{0.88}$$

where

Q is the air leakage rate per metre run of draughtstrip (in m³/h per metre);

Δp is the applied differential pressure across the specimen (in Pa).

b) The air leakage through the product over a range of applied differential pressures across the specimen from 10 Pa to 100 Pa shall not, at any point, exceed the values shown in graph 2 of figure A.8. The equation of the line in graph 2 of figure A.8 is:

$$Q = 0.65(\Delta p)^{0.74}$$

11 Resistance to wear

When tested by the method described in A.8, products designed to operate in a compression mode only shall conform to item a); those designed to operate in a wiping or sliding mode shall conform to item b); those designed to operate in both modes shall conform to items a) and b); products intended for use on the hinge side of a door or window and which will, in service, experience a combination of compression and wiping modes of action shall in addition conform to item c). Any limitations on operating mode shall be stated in the product information, as specified in 12.2. All products shall conform to item d).

- a) When subjected to repeated compression and release, the reduction in height shall be not greater than 1 mm for class 1 draughtstrips or 0.5 mm for class 2 or class 3 draughtstrips.
- b) When subjected to repeated wiping or sliding action, the reduction in height of the working section shall be not greater than 1 mm for class 1 draughtstrips or 0.5 mm for class 2 or class 3 draughtstrips.
- c) When subjected to repeated combined compression and wiping action, the reduction in height of the working section shall be not greater than 1 mm for class 1 draughtstrips or 0.5 mm for class 2 or class 3 draughtstrips.
- d) When subjected to repeated wear, products shall remain intact.

12 Marking and product information

12.1 Marking

Draughtstrips shall be marked in relation to the product, e.g. on the product itself, on the packaging or other container, the manufacturer's certificate, the delivery note or the invoice, with the following particulars:

- a) the name, trademark or other means of identification of the manufacturer;
- b) the number and date of this British Standard¹⁾;
- c) the class, i.e. class 1, 2 or 3;
- d) the manufacturer's batch or lot number.

12.2 Product information

The following information, presented in a clear and concise manner, shall be included with each retail sale and made available to bulk purchasers.

- a) *Storage*. Any limitations on storage conditions to keep the product in good usable condition.
- b) *Shelf life*. Maximum shelf life, assuming storage as recommended, by way of a use by date in the case of self-adhesive products and separate adhesives.
- c) *Suitability*. Advice on the type of door or window for which the particular class and type of draughtstrip is suitable and the type of gap and minimum and maximum gap size the draughtstrip is designed to bridge after compression by a minimum of 3 mm for class 1 draughtstrips or 1.5 mm for class 2 or class 3 draughtstrips.
- d) *Installation*. Any preparatory work required and installation instructions appropriate to the particular class of product including the recommended compression/deflection (minimum of 3 mm for class 1 draughtstrips or 1.5 mm for class 2 or class 3 draughtstrips), the mode(s) of action and methods and types of fixing.
- e) *Maintenance and use*. Cleaning and any procedures or usages to keep the product in good working condition.
- f) *Painting*. Any precautions required for newly decorated doorset or window surfaces, whether or not the product can be painted or stained, and whether or how adventitious paint or stain can be removed. A statement that draughtstrips should not be painted or stained because a working section of a draughtstrip which has been painted or stained is unlikely to continue to meet the performance achieved under this standard.
- g) *Safety warning*. A warning to the effect that before fitting draughtproofing in rooms fitted with fuel burning appliances, any existing ventilators shall be checked for proper operation.

¹⁾ Marking BS 7386 : 1997 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.