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Code of practice for

Draught control of existing doors and windows in housing using draughtstrips

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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 (Building Research Establishment)
- Department of the Environment (Property and Buildings Directorate)
- Department of the Environment (Housing and Urban Monitoring and Analysis Directorate)
- Draught Proofing Advisory Association Ltd.
- Energy Action Grants Agency
- Neighbourhood Energy Action

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Foreword

This British Standard has been prepared by Subcommittee B/540/5. It principally concerns the proper fitting of the draughtstrip materials specified in BS 7836 *Specification for draughtstrips for the draught control of existing doors and windows in housing*. Particular care was taken whilst drafting this code to ensure that, wherever possible, the performance of draughtstrips is not compromised by recommendations resulting in incorrect product selection, poor preparation of the door or window, or inappropriate fitting of the product. A fundamental requirement of a draughtstrip is that it should be flexible enough to maintain a good seal whilst the size of the gap which it seals alters due to dimensional changes in the door or window. These dimensional changes arise from the seasonal variations in climatic and indoor environmental conditions. A further requirement of a draughtstrip is that its fitting does not result in difficulty in opening or closing a door or window. These two requirements form a basis for the advice given in this code.

This British Standard also recognizes that there is a group of products which are not covered by BS 7836 and which are commonly used in specific situations, particularly on steel windows and doors. Recommendations for the application of these products, usually known as sealants, are therefore included in this code.

Whilst the fitting of draughtstrips can bring benefits of energy savings and improved thermal comfort for the occupants, this should not be at the expense of safety. This code therefore also contains important advice on maintaining adequate air supply to combustion appliances. The need to maintain adequate ventilation for the removal of indoor pollutants and the prevention of condensation and mould growth is also addressed.

This British Standard is particularly directed at specifiers, installers and manufacturers of draughtstrip products, and householders.

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 16, 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.

Introduction

Draught control by fitting draughtstrips or sealants to doors and windows in dwellings can be a simple and effective means of improving energy efficiency and occupant comfort. Although the task is relatively straightforward and often carried out on a “do it yourself” basis, there are a number of precautions and simple instructions which should be heeded if draught control is to be both safe and effective. Particular attention is drawn to the need to maintain an adequate air supply to combustion appliances.

On average, perimeter gaps around doors and windows account for about 16 % of the total area of ventilation openings in dwellings. Only rarely do these gaps account for more than 50 % of the total area in individual dwellings so the fitting of draughtstrips or the application of sealants can significantly reduce ventilation, but will rarely eliminate it. Furthermore, fresh air requirements and the ventilation rates found in practice vary enormously from one dwelling to another, so any guidance relating to draught control should of necessity be general in nature and based on a conservative approach.

The recommendations given in this code are based on the general assumption that little will be known about the ventilation characteristics of the dwelling, other than can be deduced from simple visual inspection. Where a specialized examination of the dwelling has been carried out (see Annex B) the general guidelines given here still apply but the extent to which draught control should be carried out in the dwelling should then be judged in the light of the recommendations given in Annex B.

1 Scope

This British Standard gives recommendations for the draught control of existing doors and windows in housing where this is carried out as a retro-fit measure. The guidance given mainly concerns the fitting of draughtstrips to doors and windows using the types of draughtstrip specified in BS 7386 but guidance is also given on the fitting of draughtstrips to loft hatches and the use of sealants.

The fitting of draughtstrips as smoke control seals and the installation of secondary glazing as a draught control measure for windows are outside the scope of this standard.

A list of advisory bodies is given in Annex A and notes on air leakage testing in dwellings in Annex B.

2 References

2.1 Normative references

This standard incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this standard only when incorporated in it by updating or revision.

2.2 Informative references

This 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 standard the following definitions apply:

3.1

carrier

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

3.2

combustion appliance

device which produces heat by the combustion of fuel in air. This includes cooking, water heating and space heating appliances, with or without flues

3.3

door

combination of both a door leaf and the surrounding frame into which it is fixed

3.4

draughtstrip

product with dynamic characteristics for closing perimeter gaps when the door leaf or window sash is shut, in particular for retrospective fitting to existing doors and windows that were not originally designed to receive such products. 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

3.5

perimeter gap

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

3.6 sealants

through-curing gap filling and in situ gasket materials applied in viscous liquid form

3.7 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

3.8 working section

part of the draughtstrip which exhibits the dynamic characteristics

4 Ventilation requirements

NOTE 1 Recommendations on the principles which should be observed when designing for the natural ventilation of buildings for human occupation are given in BS 5925.

NOTE 2 Recommendations on the principles which should be observed to control condensation in buildings are given in BS 5250.

4.1 Fresh air supply

Fresh air in dwellings is required for breathing, for the safe and efficient operation of combustion appliances and for the removal of pollutants. Substances which can be regarded as pollutants when found in dwellings include the following: body odour, carbon dioxide, carbon monoxide and other products of combustion, formaldehyde, pesticides and other organics, radon, landfill gases (such as methane, carbon dioxide and hydrogen sulfide), tobacco smoke, non-viable organisms and micro-organisms. When considering an individual dwelling it should be recognized that the fresh air requirements depend on the rate of production of these pollutants and the occupancy habits of the household. In general however, the “key” pollutants are water vapour and the products of combustion appliances. In general, ventilation from sources other than the gaps around windows and doors fitted with draughtstrips will restrict these pollutants to an acceptable level and be more than adequate to cope with the other pollutants.

4.2 Radon

In dwellings which have, or are suspected of having, an annual mean indoor radon concentration which is close to or greater than the “action level” set by the Department of the Environment, specialist advice should be sought from the local Environmental Health Officer before fitting draughtstrips to any door or window.

4.3 Combustion appliance requirements

4.3.1 Air supply openings

The fuels burnt in combustion appliances include mains gas, liquid petroleum gas (LPG) from a cylinder or piped from a tank, paraffin, oil and solid fuels such as coal, wood and peat. Whatever the fuel it is essential to maintain an adequate supply of fresh air to the appliance: firstly to ensure that combustion of the fuel is as complete as possible and secondly to ensure the dilution and removal of the products of combustion. These products are predominantly water vapour and carbon dioxide with small quantities of other gases such as oxides of nitrogen, carbon monoxide, formaldehyde and sulfur dioxide, depending on the type of fuel and burner.

In the UK, about 50 people die each year as a result of carbon monoxide poisoning; the number increasing during severe winters. Most fatalities are caused by faulty appliances and blocked flues or chimneys so it is essential that care should be taken to ensure that appliances and their flues or chimneys are properly maintained. In some deaths however, an inadequate air supply to a combustion appliance is a contributory factor. If adequate air supply is not provided or inadequate provision is made for the discharge of combustion products, circulation of carbon monoxide will occur within the dwelling possibly at fatal concentrations. It is therefore essential that draughtstripping measures do not restrict the ventilation necessary for correct and safe appliance operation.

There are three broad categories of combustion appliance.

- a) *Balanced-flue and room-sealed appliances*, which take their combustion air directly from outside the building and discharge their products of combustion directly to the outside of the building. The interior of the appliance is sealed from the room and there are therefore no specific implications for draught control, other than to ensure that the external terminal is not blocked or covered. However, where a gas burning appliance is fitted inside a compartment, e.g. a broom cupboard, care should be taken to ensure that the compartment is ventilated at both high and low level either to outside or to an adjoining room (see Table 1).

b) *Open-flued appliances*, which draw their combustion air from the room in which they are situated and discharge their products of combustion to the outside of the building via a flue. In most cases, a purpose provided air opening is required and it is essential to ensure that required openings are in fact present and not covered or blocked. However for certain smaller appliances, adventitious openings in the building fabric are relied upon to provide an adequate supply of fresh air to the appliance. In the latter case, care should be taken to ensure that draught control is not so extensive as to seal off all air leakage paths. Practical guidance is given in Table 1.

c) *Flueless space heating appliances*, often portable, which draw their combustion air from the room and discharge their products of combustion into the room; for example, paraffin heaters. Use of such appliances results in high rates of moisture production because all products of combustion are discharged into the room. Where such appliances are known to be in use, draughtstrips and sealants should not be installed unless appropriately sized permanent vents are provided (see Table 1 and Table 2).

NOTE These three broad categories of combustion appliance are further subdivided in Table 1 and Table 2 according to fuel type and design of appliance.

Before any draught control treatment is considered, it is essential that the draughtstrip or sealant installer should ensure that any required permanent openings to the outside of the building are provided. Where the required opening is present, of adequate size, and is not blocked or covered then draughtstrip fitting may proceed subject to precautions with extract fans (see 4.3.2) and condensation and mould (see 4.4).

Where the required opening(s) is not present, is of inadequate size, or has been obstructed or blocked, the installer should take all reasonable steps to warn the occupier of the need to provide sufficient ventilation for the safe operation of combustion appliances. The occupier should be recommended to contact the appropriate fuel advisory organization (see Annex A) for further advice. It may be possible to fit limited draughtstrips and sealants in the dwelling, i.e. deliberately omitting the fitting of some draughtstrips and sealants. In cases where draughtstrips or sealants have been deliberately omitted the installer should make the occupier aware of the reasons and of the importance of maintaining the gaps left open.

Practical guidance on the fitting of draughtstrips and sealants in dwellings with open-flued space heating appliances is given in Table 1, and for flueless domestic gas appliances in Table 2. Following the installation of draughtstrips a combustion product spillage test, as described in Annex C, should be carried out in all cases where the air supply opening to an open-flued combustion appliance is not present, or is inadequate, blocked or covered. Where the required permanent air supply opening is present, of adequate size, and is not blocked or covered then a combustion product spillage test is not necessary. Installers may also wish to carry out an initial spillage test to satisfy themselves that the appliance(s) operate correctly before draughtstrip installation work starts.

It should be noted that the omission of draughtstrips is not an acceptable means of providing an air supply for a combustion appliance when that appliance is being installed or replaced. Omission of draughtstrips is no more than a precaution in respect of safe and effective draught control where an existing appliance installation has an inadequate air supply and until such time as any required permanent air supply opening is fitted.

Although appliances in kitchens and bathrooms have to be checked for a suitable air supply, it is recommended that draughtstrips and sealants are not fitted to the windows of kitchens and bathrooms in any dwelling. Even if there are no combustion appliances in these rooms, ventilation is still required for other purposes (see 4.4).

For most combustion appliances the requirements for permanent openings in the form of airbricks or fixed vents, are statutory. Detailed information may be found in the relevant parts of the following:

- a) The Building Regulations 1991. Approved Document J, *Heat producing appliances*, 1990 edition (for England and Wales) as amended [1];
- b) The Building Standards (Scotland) Regulations 1990 (as amended): Part F [2];
- c) The Building Regulations (Northern Ireland) 1990. *Technical booklet L, Heat producing appliances*, July 1992 [3];
- d) The Gas Safety (Installation and Use) Regulations 1994, Statutory Instruments 1994 No. 1886, (amended 1996) [4].

Relevant British Standards include BS 5410 for oil fired appliances, BS 5440 and BS 5871 for gas appliances and BS 8303 for solid mineral fuel appliances.