The Building Regulations 1985

Ventilation

APPROVED DOCUMENTS

F1 Means of ventilation
F2 Condensation

Her Majesty's Stationery Office
1985
PART F
Ventilation

APPROVED DOCUMENTS

This publication includes the following Approved Documents:

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These documents have been approved by the Secretary of State as practical guidance to meeting the requirements of the above. Paragraphs in Schedule 1 to the Regulations, but there is no obligation to adopt any particular solution in the documents if you prefer to meet the requirement in some other way.

If a contravention of a requirement is alleged then, if you have followed the guidance in the document, that will be evidence tending to show that you have complied with the Regulations. If you have not followed the guidance then that will be evidence tending to show that you have not complied. It will then be up to you to demonstrate by other means that you have satisfied the requirement.

Other requirements

The guidance relates only to the Requirement given at the start of each document. The building work will also have to comply with the requirements of any other relevant paragraphs in Schedules 1 and 2 to the Regulations. Other Approved Documents give guidance on the other requirements in Schedule 1.

Materials and Workmanship

Any building work to which a requirement of the regulations applies must, in accordance with Regulation 7, be carried out with proper materials and in a workmanlike manner. You may show that you have complied with this requirement in a number of ways, for example by following an appropriate British Standard or British Board of Agrément Certificate. You will find further guidance in the Approved Document on Materials and Workmanship.

British Standards and British Board of Agrément Certificates

When a document makes reference to a named British Standard, the relevant version of the Standard is the one listed at the end of the publication.

Building Regulations are made for specific purposes; health and safety, energy conservation and the welfare and convenience of disabled people. British Standards and Agrément Certificates are relevant guidance to the extent that they relate to these considerations. The Standards and Certificates themselves may address, also, other aspects of performance such as serviceability or aspects which although they relate to health and safety are ones which are not covered by the regulations.

The Secretary of State has agreed with the British Board of Agrément the aspects of performance which they need to assess in preparing their Certificates in order that the Board may demonstrate the compliance of a product or system, which has an Agrément Certificate, with the requirements of the regulations. An Agrément Certificate issued by the Board under these arrangements will give assurance that a product or system to which the Certificate relates, if properly used in accordance with terms of the Certificate, will meet the relevant requirements.
MEANS OF VENTILATION

Building Regulations – the Requirement

This Approved Document deals with the following Requirement from PART F of Schedule 1 to the Building Regulations 1985:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Limits on application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls, roofs</td>
<td>This requirement applies only to—</td>
</tr>
<tr>
<td>Means of ventilation</td>
<td>(a) dwellings;</td>
</tr>
<tr>
<td></td>
<td>(b) buildings containing dwellings;</td>
</tr>
<tr>
<td></td>
<td>(c) rooms containing sanitary conveniences; and</td>
</tr>
<tr>
<td></td>
<td>(d) bathrooms.</td>
</tr>
</tbody>
</table>

Acceptable level of performance

The requirement of Paragraph F1 will be met if ventilation under normal conditions is capable, if used, of restricting the accumulation of such moisture and pollutants (originating in a building) as would otherwise become a hazard to the health of people in buildings.
Section 1
Natural ventilation

1.1 Ventilation by natural means will meet the performance if ventilation openings are sized and sited as described in Table 1.

1.2 In this section:

A **ventilation opening** includes any means of ventilation (whether it is permanent or closable) which opens directly to external air, such as the openable parts of a window, a louver, airbrick or progressively openable ventilator. It also includes any door which opens directly to external air, if the room or space also has an area of ventilation opening equal to at least 100mm × 100mm, which can be opened without opening the door.

Ventilation openings should have a smallest dimension of at least 10mm to minimise resistance to the flow of air.

Refer also to paragraph 1.5 if a ventilation opening serving a habitable room faces a wall nearer than 15m.

**Common space** means a space used by one or more dwellings.

**Habitable room** means a room used for dwelling purposes but not a kitchen or scullery.

**Sanitary accommodation** means a space containing one or more closets or urinals. Sanitary accommodation containing one or more cubicles counts as a single space if there is free circulation of air throughout the space.

1.3 Two rooms or spaces may be treated as a single room or space for ventilation purposes if there is an area of permanent opening between them equal to at least 1/20th of the combined floor areas.

### Table 1 Natural ventilation

<table>
<thead>
<tr>
<th>Room or space</th>
<th>Ventilation to be provided (ventilation openings)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 In dwellings:</strong></td>
<td></td>
</tr>
<tr>
<td>habitable rooms, kitchens and</td>
<td>at least one ventilation opening with an area of at least 1/20th of the floor area of the room or space</td>
</tr>
<tr>
<td>bathrooms</td>
<td>some part at least of the ventilation opening to be at least 1.75m above the floor level</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2 In buildings containing dwellings:</strong></td>
<td></td>
</tr>
<tr>
<td>common spaces</td>
<td>at least one ventilation opening with an area of at least 1/50th of the floor area of the space</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3 In any building:</strong></td>
<td></td>
</tr>
<tr>
<td>sanitary accommodation</td>
<td>at least one ventilation opening with an area of at least 1/20th of the floor area of the room or space</td>
</tr>
</tbody>
</table>

**VENTILATING A HABITABLE ROOM THROUGH AN ADJOINING SPACE**

1.4 A habitable room may be ventilated through an adjoining space if:

(a) the adjoining space is a conservatory or a similar space, and

(b) there is an opening (which may be closable) between the habitable room and the adjoining space with an area which is equal to at least 1/20th of the combined floor areas of the room and the space, and

(c) there is a ventilation opening area in the room and the space together, or in the space alone, and that area is equal to at least 1/20th of the combined floor areas of the room and the space, and

(d) some part at least of the ventilation opening area is at least 1.75m above the floor level.
VENTILATING A HABITABLE ROOM TO EXTERNAL AIR

1.5 If a ventilation opening serving a habitable room faces a wall nearer than 15m, the following minimum distances should be maintained:

(a) If there is a wall on each side of the opening (forming a closed court), (see Diagram 1(a)) then the vertical distance from the top of the opening to the top of the wall containing the opening $D_t$ should be less than twice the horizontal distance from the opening to the facing wall $D_f$, or

(b) if there is a wall on only one side of the opening (forming an open court), (see Diagram 1(b)) and if the length of the facing wall $D_l$ is more than twice the horizontal distance from the opening to the facing wall $D_f$, then either –

(i) the vertical distance from the top of the opening to the top of the wall containing the opening $D_t$, or

(ii) the horizontal distance from the side of the opening to the open side of the court $D_s$, should be less than twice the horizontal distance from the opening to the facing wall $D_f$.

Alternative approach

1.6 The performance can also be met by following the relevant recommendations of BS 5925: 1980 Code of practice for design of buildings: ventilation principles and designing for natural ventilation, of which the relevant clauses are 11 to 15.
Section 2
Mechanical ventilation

2.1 Ventilation by mechanical means will meet the performance if rates of air changes are provided as described in Table 2.

<table>
<thead>
<tr>
<th>Room or space</th>
<th>Ventilation to be provided (air changes per hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 In dwellings:</td>
<td></td>
</tr>
<tr>
<td>(a) habitable rooms</td>
<td>1</td>
</tr>
<tr>
<td>(b) kitchens</td>
<td>3</td>
</tr>
<tr>
<td>(c) bathrooms</td>
<td>3*</td>
</tr>
<tr>
<td>2 In buildings containing dwellings:</td>
<td></td>
</tr>
<tr>
<td>(a) common spaces</td>
<td>1</td>
</tr>
<tr>
<td>3 In any building:</td>
<td></td>
</tr>
<tr>
<td>(a) sanitary accommodation</td>
<td>3*</td>
</tr>
</tbody>
</table>

* The ventilation may be intermittent but should run for at least 15 minutes after the use of the room or space stops

Alternative approach

2.2 The performance can also be met by following the relevant recommendations of BS 5720: 1979 Code of practice for mechanical ventilation and air conditioning in buildings. The relevant clauses are:

- 2.3.2.1
- 2.5.2.10 and 2.5.2.11
- 3.1.1.1
CONSENSATION

Building Regulations – the Requirement

This Approved Document deals with the following Requirement from PART F of Schedule 1 to the Building Regulations 1985:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Limits on application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condensation</td>
<td>This requirement applies only to dwellings.</td>
</tr>
<tr>
<td>Roof voids.</td>
<td>F2. Reasonable provision shall be made to</td>
</tr>
<tr>
<td></td>
<td>prevent excessive condensation in a roof</td>
</tr>
<tr>
<td></td>
<td>void above an insulated ceiling.</td>
</tr>
</tbody>
</table>

Acceptable level of performance

The following general level of performance is approved as meeting the requirement.

To assist the conservation of energy and to reduce the risks to the health and safety of people in buildings, condensation in spaces above insulated ceilings should be limited to an extent such that under normal conditions:

(a) the thermal performance of the insulant materials, and

(b) the structural performance of the roof construction

will not be permanently reduced.
1.1 This document describes provisions for roofs with the insulation below the rain barrier (a cold roof). The requirements do not apply to roofs with insulation above a void (warm roofs).

**Roof**—Although a part of a roof which has a pitch of 70° or more is to be insulated as though it were a wall, the provisions in this document apply to roofs of any pitch.

1.2 Ventilation openings may be continuous or distributed along the full length. Purpose-made components are available to ensure that quilt and loose fill insulation will not obstruct the flow of air where the insulation and the roof meet.

**ROOFS WITH A PITCH OF 15° OR MORE**

*(pitched roofs)*

1.3 If the ceiling follows the pitch of the roof see paragraphs 1.7 to 1.11.

1.4 Pitched roof spaces should have ventilation openings at eaves level to promote cross ventilation. These openings should have an area at least equal to continuous ventilation running the full length of the eaves and 10mm wide. *(see Diagrams 1(a) and (b))*

1.5 A pitched roof space which has a single slope and abuts a wall should have ventilation openings at eaves level and at high level. The ventilation at high level may be arranged at the junction of the roof and the wall or through the roof covering. If it is through the roof covering it should be placed as high as practicable.

**Alternative approach**

1.6 The performance can also be met by following the relevant recommendations of BS 5250: 1975 *Code of basic data for the design of buildings: the control of condensation in dwellings*. This contains information which can be used in devising solutions to meet the requirement of the Regulations. The relevant Clauses are 22.8 and 22.10 to 22.16.
ROOFS WITH A PITCH OF LESS THAN 15°

1.7 These provisions also apply to roofs with a pitch of 15° or more if the ceiling follows the pitch of the roof.

1.8 Roof spaces should have ventilation openings in two opposite sides to promote cross ventilation. These openings should have an area at least equal to continuous ventilation running the full length of the eaves and 25mm wide. (see Diagram 1(c)).

1.9 The void should have a free air space of at least 50mm between the roof deck and the insulation. Where joists run at right angles to the flow of air a suitable air space may be formed by using counter-battens.

1.10 Where the edges of the roof abut a wall or other obstruction in such a way that free air paths cannot be formed to promote cross ventilation, or the movement of air outside any ventilation openings would be restricted, an alternative form of roof construction should be adopted.

1.11 Vapour checks can reduce the amount of moisture reaching a void but they cannot be relied on as an alternative to ventilation. A complete barrier to moisture is needed for this.

Alternative approach

1.12 The performance can also be met by following the relevant recommendations of BS 5250: 1975 Code of basic data for the design of buildings: the control of condensation in dwellings. This contains information which can be used in devising solutions to meet the requirement of the regulations. The relevant recommendations are in clauses 22.8 to 22.12. Clause 18 of BS 6229: 1982 Code of practice for flat roofs with continuously supported coverings contains further information.
British Standards referred to

F1


F2

BS 5250: 1975 Code of basic data for the design of buildings: the control of condensation in dwellings.
Amendment slip number 1: AMD 3025
2: AMD 4210.

BS 6229: 1982 Code of practice for flat roofs with continuously supported coverings.