
British Standard

Thermal insulation for use in pitched roof spaces in dwellings

Part 5. Specification for installation of man-made mineral fibre and cellulose fibre insulation

Isolation thermique des espaces sous combles des locaux d'habitation
Partie 5. Installation des isolations thermiques à base de fibres minérales synthétiques et de fibres de cellulose — Spécifications

Wärmedämmung in Mansarden
Teil 5. Anbringung von Wärmedämmung aus Kunst- und aus Zellulosefasern

Foreword

This Part of BS 5803 has been prepared under the direction of the Elements and Components (of Diverse Materials) for Building Standards Committee.

The thermal transmittance of a ceiling to the roof space of a dwelling is reduced by the application of thermal insulation materials, either between or over the ceiling joists.

This Part covers the assessments of the roof and the methods of installing the insulation material. It covers the following situations:

- (a) where the contract is for the insulation of a single dwelling;
- (b) where the contract is for a number of dwellings.

BS 5803 comprises the following Parts:

- Part 1. Specification for man-made mineral fibre thermal insulation mats
- Part 2. Specification for man-made mineral fibre thermal insulation in pelleted or granular form for application by blowing
- Part 3. Specification for cellulose fibre thermal insulation for application by blowing
- Part 4. Methods for determining flammability and resistance to smouldering
- Part 5. Specification for installation of man-made mineral fibre and cellulose fibre insulation

NOTE. This Part has been written in the form of a specification (see clause 6 of PD 6501 : Part 1 : 1982). To comply with this specification, the user has to comply with all its requirements. He may depart from recommendations, but this would be on his own responsibility and he would be expected to have good reasons for doing so.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

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in dwellings
Part 5. Specification for installation of man-made
mineral fibre and cellulose fibre insulation

Revised text

Clause C.1 General

Delete the existing text and substitute the following.
'All electric cables carrying current produce heat. The heat will dissipate into atmosphere if the installation is exposed to air and the cable is carrying current within its nominal capacity. This capacity is known as the 'full thermal current rating' of the cable. However if the cable is prevented from losing heat by surrounding it with thermal insulation, the temperature of the cable will rise unless the current being carried is reduced. This could cause softening of the cable insulation increasing the risk of a short circuit or fire.
The cable may be selected to have a rating high enough to carry the full circuit load when derated by the recommended factor to allow it to be covered with thermal insulation without overheating. An appropriate over-current protective device, e.g. a fuse, suitable for the derated cable should be incorporated into the circuit.

NOTE. Detailed guidance is given in appendix 4 of BS 7671 : 1992.'

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Clause C.2 Prevention of overheating in cables

Delete the existing text in C.2.1, C.2.2 and C.2.3, including the subclause numbers, and substitute the following.

'Where possible, before installing the insulation material between the joists the cables should be suitably located away from the insulation so that they continue to be exposed to air. However there may be insufficient slack in the cables to allow this in which case the insulation should be placed on top of the cables but pushed back by at least 75 mm in both directions from bunched and heavy loading cables serving appliances such as heaters, cookers and showers. In the case of loose fill insulation a physical restraint should be used, for example rigid boarding or non-magnetic metal rings take due care to protect the cables from any physical damage that might occur where they pass over such restraints.

Alternatively the cables may be replaced with those to which an appropriate derating factor has been applied, and the circuits should be fitted with appropriate over-current protective devices, e.g. a fuse, in accordance with C.1.'

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Clause C.3.1 Appliances penetrating the ceiling

Delete the existing text and substitute the following.

'No thermal insulating material of any kind should be placed over electrical apparatus which penetrates a ceiling, recessed luminaires, or their heat resisting final cable connections. Such luminaires and cables should be left exposed to the air for a minimum clearance distance of 75 mm.

In the case of loose insulation a permanent physical restraint, as referred to in C.2, should be employed.'

AMD 8040/February 1994

Publications referred to

At the end of the publications referred to, insert the following.

'BS 7671 : 1992 Requirements for electrical installations'

AMD 8040/February 1994

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Specification

1 Scope

This Part of BS 5803 specifies requirements for the application of thermal insulation in pitched roof spaces in new and existing dwellings. It covers both the insulation of an uninsulated roof and the application of additional insulation to increase the existing standard of insulation. Insulation at rafter level is not included but advice on this type of installation is given in appendix A.

The standard specifies essential procedures and precautions to be undertaken, and makes recommendations to ensure an adequate installation.

It covers fibrous materials that may be substantially inorganic or organic and may be in the form of mats or loose-fill suitable for application by blowing.

It covers the following situations:

- (a) an individual dwelling where the work is carried out by an insulation installer;
- (b) a number of dwellings where the work is carried out by an insulation installer;
- (c) an individual dwelling where the work is carried out without a contract.

NOTE. In all cases the clauses covering workmanship apply.

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

2 Definitions

For the purposes of this Part of BS 5803 the definitions given in BS 3533 and BS 3589 apply together with the following.

2.1 mat. A length of flexible man-made mineral fibre insulating material normally supplied as a roll or batt.

2.2 batt. Mat in the form of rectangular pieces generally between 1 m and 2 m in length, supplied packed flat or folded.

2.3 loose-fill. Products in loose, granulated or pelleted form.

2.4 blowing. Moving into position by a mechanically induced air current.

2.5 cellulose fibre. A loose-fill insulation composed of cellulose (wood-based) fibre treated with fire retardant agents and biocidal additives.

2.6 man-made mineral fibre. A generic term for all man-made non-metallic inorganic fibres.

2.7 insulation installer. Installer of thermal insulation material.

2.8 R value. Thermal resistance (in $\text{m}^2 \cdot \text{K}/\text{W}$) assessed at the appropriate thickness.

NOTE. See BS 5803 : Parts 1, 2 and 3.

3 Insulation materials

The insulation material shall consist of one of the following:

- (a) man-made mineral fibre mats complying with BS 5803 : Part 1;
- (b) man-made mineral fibre in pelleted or granular form complying with BS 5803 : Part 2;
- (c) cellulose fibre complying with BS 5803 : Part 3.

4 Condition of roof space

To ensure that the insulation of the roof space will be satisfactory the roof space shall be adequately ventilated to prevent condensation and be in a satisfactory state of repair.

COMMENTARY AND RECOMMENDATIONS ON CLAUSE 4.

The following recommendations should be followed.

(a) Ventilation. *Ventilation of the roof space should be as agreed in appendix B.*

(b) State of repair. *There should be no obvious rainwater penetration or evidence of such penetration, nor evidence of wet or dry rot in the roof space.*

(c) Loading of ceiling. *The ceiling should be capable of supporting the weight of the insulation and loads imposed during installation.*

(d) Electrical wiring. *There should be no obvious defects in the electrical wiring. General guidance on the avoidance of overheating of electric cables is given in appendix C.*

(e) Metal corrosion. *There should be no obvious corrosion to the structural metal connections in the roof members.*

5 Assessment of work required in roof space

The client and the insulation installer shall establish the basis for the contract before starting work.

NOTE. Attention is drawn to the requirements of the Unfair Contract Terms Act 1977 and the general common law duty of care to avoid injury to persons or property by negligent act or omission so far as is reasonably practicable.

COMMENTARY AND RECOMMENDATIONS ON CLAUSE 5.

The following items should be among those established.

(a) *Any requirements necessary to ensure that the conditions in clause 4 are met.*

(b) *Areas to be insulated.*

(c) *Type of insulation to be provided.*

(d) *R value of the material to be installed, or the different values over the areas concerned where applicable.*

(e) That for the purpose of installation there is adequate access to the roof space and adequate lighting. Where temporary access is to be formed, the details and method of reinstatement should be agreed.

(f) The need to reposition or remove objects stored in the roof space to allow the full ceiling area to be insulated.

(g) Storage and expansion tanks that require insulating and those that require lids to be fitted (see 6.5 and item (b) of clause 8).

(h) Water pipes that will be above the insulation and that require insulating separately (see item (c) of clause 8).

6 Application of insulation material

6.1 Hygiene

When installing insulation, suitable precautions shall be taken in regard to hygiene.

COMMENTARY AND RECOMMENDATIONS ON 6.1. *When applying any form of insulation particularly in confined areas, dust may be generated. To prevent inhalation of the dust a suitable dust mask should be worn.*

Man-made fibres can cause skin, eye and throat irritation and should be handled with care. Some protection can be provided by the wearing of suitable protective clothing. When washing contaminated skin, it should first be rinsed under cold running water before the application of soap which, if applied too soon, may rub fibres into the skin.

Packages should only be opened in the loft (except where the material is a blown fibre) and should be unrolled gently. Blown fibre should be poured gently so that loose fibres are not blown about.

Precautions should be taken to ensure the insulation material does not lead to contamination of the water tank.

6.2 General

Before starting work, all holes at ceiling drops for pipes and other services shall be sealed. Where heating systems or appliances have inlets within the loft space for air for combustion or heating, before commencing work in the loft space the heating system or appliance shall be turned off and appropriate action taken to ensure that it cannot be inadvertently turned on again until the work is complete.

With the appliance off the air inlets in the loft shall be sealed. The seal shall be removed and the appliance turned on only when the work is complete.

6.3 Mats

6.3.1 Materials. There are no requirements for materials.

COMMENTARY AND RECOMMENDATIONS ON 6.3.1.

Preferably the mat should be of such a width that it can be laid between the joists. Wide rolls are also available and these may be cut to fit joist widths or laid over the joists as a blanket.

Generally the mat is compression packed and it should be unpacked within the roof space.

6.3.2 Application between joists. Application between joists shall be carried out as follows.

(a) When insulating between joists take the mat (roll or batt) to one end of the roof space and unroll it or lay it. With the free end at the wall plate lay the mat between the joists, working towards the middle of the roof space. In the case of roofs with a small angle of pitch push the mat into position at the wallplate by use of a suitable implement. Ensure that the end of the mat is not inserted into the eaves so far as to obstruct ventilation or alternatively provide a suitable stop or alternative ventilation (see figures 1, 2 and 3).

(b) When the mat has been laid to the middle of the roof space cut the material. Take the remainder to the wallplate of the next uninsulated section and repeat the process. Continue this practice until the whole of one side of the roof space is completed. Repeat the procedure on the other side of the roof space. Butt joint the material where the lengths join.

(c) Where there are binders running immediately above and at right angles to the main joists, cut the mat where the two intersect. Push the mat below the binder and butt joint.

(d) Insulate areas within the roof space that are not the same width as the normal joint space by cutting strips of the correct width from the roll. Tailor these strips neatly into the space to be insulated.

COMMENTARY AND RECOMMENDATIONS ON 6.3.2.

Application between joists is the preferred method and has the advantage that the position of joists can be located so lessening the risk of accidental ceiling damage and removing the need to cut round vertical supports.