General requirements and guidance for the installation of cold roof loft insulation

(Version 2)

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To maximise the energy and CO2 savings achieved with each installation, this document sets out the general requirements and guidance that should apply to any professional installation of cold roof loft insulation (in addition to any contract and scheme rules that may apply). This document has been developed by EEPB under contract from the Department for Energy and Climate Change (DECC) and in consultation with industry stakeholders, and has been updated by CITB.

This document is intended as guidance only and does not constitute legal advice or provide a definitive legal interpretation of the relevant legislation.

1 Introduction

To maximise the energy and CO_2 savings achieved with each installation, this document sets out the general requirements and guidance that should apply to any professional installation of cold roof loft insulation (in addition to any contract and scheme rules that may apply). This document has been developed by EEPB under contract from the Department for Energy and Climate Change (DECC) and in consultation with industry stakeholders, and has been updated by CITB.

1.1 Definitions

A loft for the purposes of this general requirements and guidance is the attic space directly below the roof of a domestic dwelling, not used for accommodation but often for storage.

A cold roof is a situation created by insulation of a loft at *joist* level (whereas a warm roof is created by insulation at *rafter* level).

2 General requirements and guidance

2.1 All installers contracted to perform loft insulation works shall:

(a) undertake the measures without detrimental effect on the dwelling, giving specific consideration to traditional, pre 1919, buildings;

(b) explain all measures to be undertaken, including ancillary works such as removal of boards. Obtain the client's approval prior to works commencing and ensure that the client is satisfied with the work;

(c) ensure that the measures do not compromise the safety of the household or the contents and structure of the dwelling;

(d) ensure that a risk assessment is completed prior to commencement of work;

(e) work in a manner ensuring their own safety and that of the householder and any other parties;

(f) ensure that all legal and statutory obligations, in relation to the work, are met.

2.2 Cleanliness and tidiness

The contractor carrying out the installation works shall leave the fitted materials, the areas being worked on and surrounding areas clean and undamaged.

All debris directly resulting from the insulation of the loft space is to be removed by the installer immediately, following completion of the work. All wrappings and off-cuts from the materials must be recycled wherever possible.

2.3 Manufacturers' instructions

Manufacturers' instructions should always have preference unless explicitly stated otherwise in these general requirements and guidance (e.g. for flues and fire-resistant materials). Any variation or indulgence from the manufacturer's instructions should be obtained from the manufacturer in writing and retained by the installer.

For sprayed PUR foam insulation, all material should be installed in accordance with the relevant certificate from a UKAS-accredited third party certification body, by an installer approved by the Certificate holder.

3 Materials and Products

3.1 Minimum insulating performance

Current building regulations/standards should be met.

3.2 Approval

All materials and products used shall be approved by the relevant authority and covered by the relevant industry standards (BS or EN, where available) or UKAS-accredited third party certification.

3.3 Suitable materials and products for loft insulation (informative)

The following list is non-exclusive, other materials and systems may be used if they comply with clauses 3.1 and 3.2. The industry standards governing these materials are listed in Appendix 2: Index of Industry Standards. (Please refer to manufacturer's website for specific data sheets).

- **Mineral wool rolls and slabs**
- **Blown mineral fibre granules or pellets**
- **Blown cellulose fibre**
- **Wool-based batts**
- **Spray applied rigid closed-cell polyurethane (PUR) insulation**
- **Rigid foam board**
- **Pipe and tank insulation**

4 Scope and extent

4.1 Coverage

The insulation works shall cover the entire loft space, including all tanks and pipes, unless there is a compelling reason, which must be documented (see clause 5.7.6).

4.2 State of repair

An initial survey of the loft space is to be carried out prior to commencement of any works. This shall be documented and retained by the contractor (see section 5.7.1). No works shall be carried out unless the state of repair of the roof space together with any installations meets the general requirements and guidance below:

4.2.1 Ventilation

Ventilation is a necessary requirement of loft spaces to prevent the risk of harmful condensation forming. Condensation promotes mould growth, which can endanger the health and well-being of building occupants and ultimately the integrity of the building fabric through rotting and degradation. The requirement for adequate ventilation is particularly the case when additional insulation is fitted, as the loft space will be colder in winter than previously. If there are distinct signs of inadequate ventilation pre-installation, such as mustiness, wet or dry rot or mould growth, the works shall not progress until the ventilation issue is addressed. Recommended remedial action should be recorded in the survey. Specific consideration, relating to condensation, should be given to traditional, pre 1919, buildings. The ventilation general requirements and guidance are detailed in clause 5.1.2.

4.2.2 Rainwater penetration

There shall be no visible ongoing rainwater penetration or evidence of such penetration.

4.2.3 Ceiling condition

The ceiling shall be in a good visible state of repair.

4.2.4 Electrical connections

There shall be no visible defects in the electrical wiring of the roof space.

4.2.5 Roof members

There shall be no visible corrosion of the structural metal connections or degradation of timbers in the roof space.

4.2.6 Leakage and damp

There shall be no evidence of ongoing leakage or damp from existing water supply pipework, tanks or heating systems.

4.2.7 Ventilation impediment

Where existing insulation has been pushed into the eaves and is impeding the necessary ventilation, this should be moved prior to the top-up being carried out. If necessary, insulation interrupters/rafter trays should be fitted to ensure the air path remains open. Refurbishment products are available for this purpose.

4.3 Other variations

4.3.1 Pre-existing insulation

(a) Existing loft insulation which is still fit for purpose shall be left in situ and topped up to comply with current building regulations/standards[1]. Examples of insulation being unfit for purpose include health and safety concerns (e.g. due to vermin infestation or bird litter or where signs of damp are visible).

(b) Existing water tank insulation shall not be modified if compliant with clause 5.2; existing pipe insulation shall not be modified if compliant with section 5.3 of this general requirements and guidance.

(c) Sections of un-insulated pipework included in the roof space insulation works, which lie at least 50mm below the surface of the new material and are completely covered by the new material, do not require insulating.

(d) Additional roof space is considered separately for the purposes of qualification for loft insulation work. Where a roof space exists over a building extension which has had insulation fitted, providing the insulation complies with the current Building Regulations/Standards any additional roof space may be ignored when calculating the thickness of existing insulation in the original loft spaces.

(e) Where insulation is present around pipework and this does not meet the general requirements and guidance laid out in this document, then this should be removed and the correct size of pre-formed material[2] applied. If removal of the old material is likely to cause damage to pipes resulting in leaks etc. then pre-formed material with a larger than normal bore may be fitted over the existing material.

NOTES: [1] *The total insulation value must be at least as high as specified in clause 3.1.*
[2] *Where pre-formed insulation cannot be used refer to 5.3.3.*

4.3.2 Asbestos

Important: Asbestos and Asbestos-Containing Materials (ACMs) are sometimes found in the loft spaces where it is used to insulate water tanks and pipes etc. and in heating systems for flues etc.

All ACMs can be highly dangerous if disturbed. When encountering ACMs in a loft space, installers should follow their own procedures.
Refer to www.hse.gov.uk/asbestos for further guidance and legal requirements associated with asbestos.

4.3.3 Protected Species

Any species protected under European Law, please refer to relevant legislation.

5 Insulation works

5.1 Roof spaces

5.1.1 Ceiling holes and gaps

All holes at ceiling drops for pipes and other services shall be sealed where practically possible using silicone sealant, foam, tape, or a combination of these. Holes or gaps in the ceiling too large to fill require building work which would need to take place before any loft insulation works. Where the ceiling represents part of a fire compartment then penetrations should be protected according to current building regulations/standards.

5.1.2 Ventilation

All ventilation inlets in the roof space inadvertently sealed during the installation or blocked with the original insulation material shall be cleared. If necessary, insulation interrupters/rafter trays should be fitted to ensure the air path remains open. Refurbishment products are available for this purpose.

If no designed ventilation exists in the roof space, refer to BS 5250 [1]. In addition, the following general requirements and guidance may be used including when using blown or spayed insulation materials:

(a) Ventilation in the roof space shall be the equivalent of a continuous 10mm gap at low level with an insulation interrupter/rafter tray over the top of the insulation to provide at least a 25mm gap (to account for underlay drape and rafter centers) if soffit or fascia ventilation already exists. Additional ventilation in the soffit or on the fascia may need to be added. If this is not possible then tile or slate ventilators should be used to provide the guaranteed air path from loft space to outside atmosphere on either side of the roof at low level. Ensure that any penetrations through the underlay are properly detailed and protected.

(b) High level ventilation: the equivalent of a continuous 5mm gap should also be considered if the roof pitch is in excess of 35 degrees or the span in excess of 10m.

In all cases, ventilation of the loft space should not be made worse by the loft insulation installed and be sufficient to prevent the harmful effects of condensation. Effective sealing of gaps in the ceiling will also limit the risk of condensation forming within the loft space.

Any services that require combustion ventilation in the loft space will require consideration of the viability of the installation (e.g Vertex Flues).

5.1.3 Vertical walls

The thickness and type of insulation fitted to vertical loft walls e.g. dormer walls, shall be sized and applied to suit the wall (timber frame) thickness. Any insulation installed under this provision, must satisfy the roof space ventilation requirement detailed in section 5.1.2.

5.1.4 Cavity Walls

The insulation material shall not enter the cavity of any cavity wall. To minimise cold bridging, where possible, the loft insulation should link to the cavity wall insulation (if present).

5.1.5 Clearance from flues or chimneys

Only fire classification A1 or A2 materials that comply with BS EN 13501-1 [2] should be used when insulating within 150mm of flues and chimneys. Where the product meets these criteria the insulation shall be installed up to the outer casing of the flue or chimney.

5.1.6 Electrical apparatus

A recessed light fitting that is not type “F-capped”, shall either be replaced with a fitting that is certified both “F-capped” and “IP6X dust tight” rated at 50 watt or have equivalent covers placed over them to comply with relevant industry standards BS EN 60598-1/BS EN 60598-2 [3]. This could be carried out prior to installing the insulation. Once all downlighters are fitted with “F-capped” certified equipment, they shall be covered by insulation material without leaving a gap.

The “F-capped” symbol

For other electrical apparatus penetrating the ceiling the insulation material shall be retained at a minimum of 75mm (maximum 150mm) away from the apparatus.

When loose insulation materials are installed then a permanent physical restraint shall be used, (e.g. boarding or expanded metal rings). Any cable passing over any restraint shall be protected against damage.

Any transformers or ballast units (e.g. for halogen or LED lighting) shall be placed on a suitably sized plate (typically 150x150mm) made from non-combustible material, which sits on top of the insulation where possible. If not possible the insulation material shall be retained at a minimum of 75mm (maximum 150mm). Transformers or ballast units must not be buried under insulation material unless they are specifically approved for this purpose.

5.1.7 Smoke Alarms/Boilers/Inverters

Smoke Alarms/Boilers/Inverters etc must be protected and isolated where applicable in the loft space during installation of insulation to protect against dust invasion which can cause false alarms or damage to appliances. The protection cannot remain in place when the loft is unoccupied/overnight and must be removed after the work is completed when any items isolated can be switched back on. (The occupant should be made aware that equipment is to be isolated and that responsibility for any problems after reconnecting the supply will rest with the occupant. Boilers in lofts would usually be quite new and therefore are likely to have electronic ignition which should restart when required.)

5.1.8 High-ampere electric cables

Electric cables supplying storage heaters, immersion heaters, electric showers, electric cookers or solar PV shall not be covered by thermal insulation. Cables to these appliances shall be lifted above the insulation. If this is not possible, the insulation must be retained at a minimum distance of 75mm (maximum 150mm).

5.1.9 Existing boards

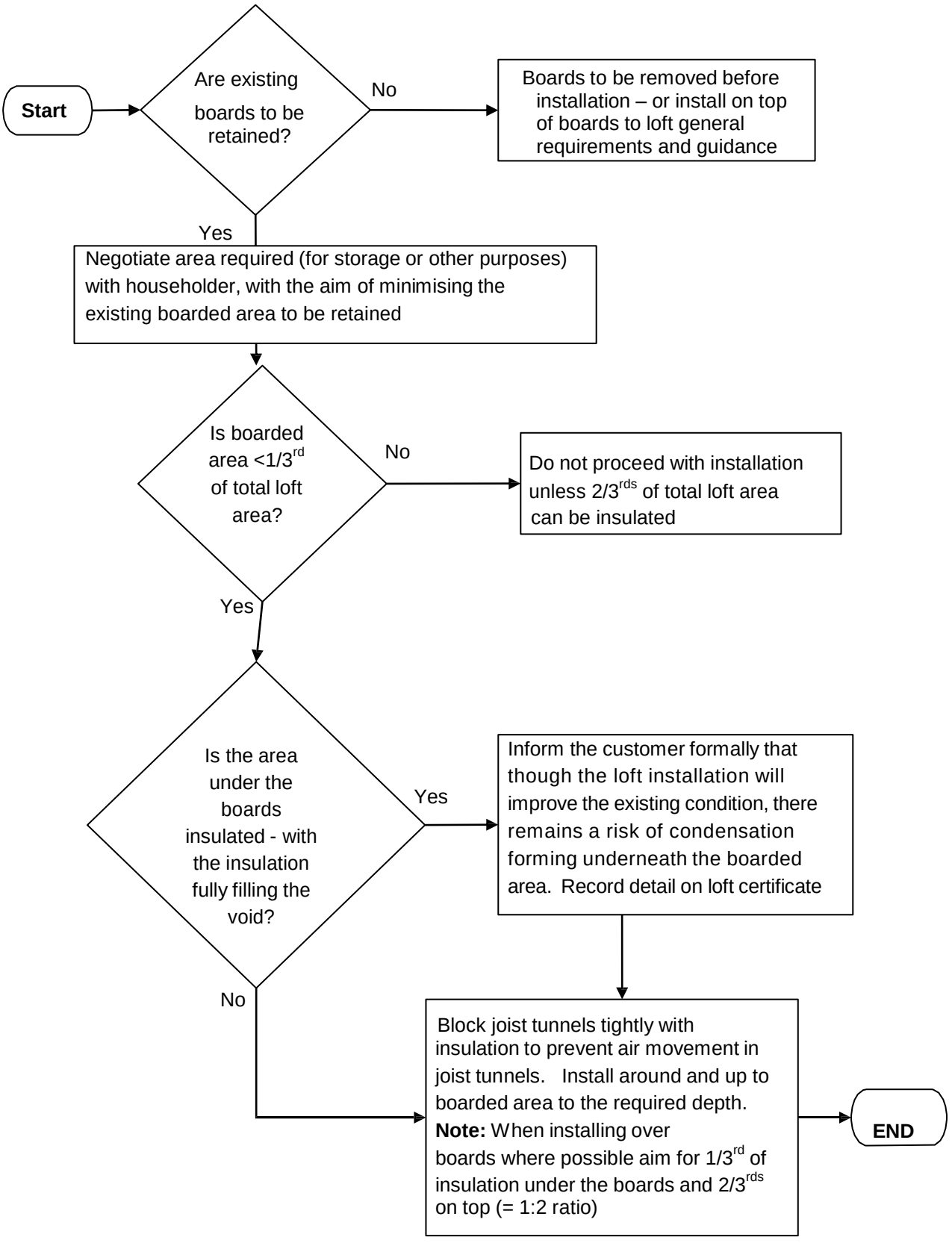
Where the loft of a dwelling has boards covering all or part of the loft floor, these should be removed prior to the insulation being applied. The removal may be carried out by the installer, the client or a third party.

Where boards are to be retained for storage, access or other purposes, the steps detailed on the following page (10) are to be followed.

Depending on the roof pitch adequate or sufficient distance will be required between the eaves area and the outer edge of any existing board for the installer to be able to block joist tunnels tightly. Any boards which are too close to the eaves to enable them to be blocked tightly will have to be removed.

5.1.10 Additional requirement for spray applied rigid closed cell polyurethane (PUR) foam

Sprayed PUR foam insulation should only be applied by an installer approved by a manufacturer holding the relevant certificate from a UKAS-accredited third party certification body.


Start
Are existing boards to be retained?
No
Boards to be removed before installation – or install on top of boards to loft general requirements and guidance
Yes
Negotiate area required (for storage or other purposes) with householder, with the aim of minimising the existing boarded area to be retained
Is boarded area <1/3rd of total loft area?
No
Do not proceed with installation unless 2/3rds of total loft area can be insulated
Yes
Is the area under the boards insulated - with the insulation fully filling the void?
Yes
Inform the customer formally that though the loft installation will improve the existing condition, there remains a risk of condensation forming underneath the boarded area. Record detail on loft certificate
No
Block joist tunnels tightly with insulation to prevent air movement in joist tunnels. Install around and up to boarded area to the required depth.
Note: When installing over boards where possible aim for 1/3rd of insulation under the boards and 2/3rds on top (= 1:2 ratio)
END

5.2 Cold Water Tanks

5.2.1 Tank jacket

The cold water supply tank must have a new or existing insulation jacket fitted which complies with relevant industry standards BS 5442 [4]. Where a standard jacket cannot be fitted, one must be constructed which shall:

(a) be tightly fitting but not airtight;

(b) be opaque;

(c) be of material not likely to fragment nor contaminate any condensate which may form on its underside;

(d) exclude insects;

(e) be securely fixed in position;

(f) not impart taste, colour, odour or toxicity to the water;

(g) not promote or foster microbial growth under the conditions where the tank is installed;

(h) be of material which is corrosion resisting or will be coated internally with corrosion resisting material;

(i) be arranged to accommodate any vent or expansion pipes in closely-fitting, purpose-made holes or sleeves;

(j) be made of materials compatible with those of the tank.

(k) be of solid construction and able to support in excess of its own weight.

5.2.2 Surrounding insulation

A cold-water tank shall be completely enclosed and insulated, i.e. the insulation shall be applied to the underside of the tank.

Where practical, if the tank is located less than 300mm above the joists, two layers of insulation should be applied under the tank ensuring the base of the tank is insulated.

5.2.3 Tank accessibility

The insulation when applied to the tank shall take into account any domestic hot water expansion pipe outlets and the insulation shall be easily removable for access to the inside of the tank.

Neither the insulation nor the fastenings shall interfere with the correct operation of the water control valve and mechanism.

5.2.4 Tank insulation thickness

The minimum insulation thickness of the tank insulation shall be as specified in the relevant industry standard(s) BS 8558 [5].

5.2.5 Insulating jacket

A correctly sized insulating jacket, tested and approved to the relevant industry standard BS 7181 [6], will be fitted to the cold water storage tank.

5.3 Pipe insulation

5.3.1 Water Supply and Expansion Pipes

All pipes containing water or which shall contain water at infrequent intervals (excluding overflow pipes) shall be insulated over their entire length. Insulation at control and isolating valves shall be arranged to allow ready access to the operating facilities of such.

The minimum thickness of the insulating material shall be as required in the Domestic Building Services Compliance Guide: 2010[1] specified in relevant industry standards BS 8558 [5] and applicable water bylaws[2, 3].

[1] Details on actual thicknesses of insulation to meet these requirements can be found in the TIMSA Domestic and Non-Domestic Heating, Cooling and Ventilation Guide, Section 6: http://timsa.associationhouse.org.uk/default.php?cmd=210&doc_category=98

[2] For an example, see http://www.ukcopperboard.co.uk/literature/pdfs/Installation-Tips/Insulation-and-Bylaw-requirements.pdf

[3] Further details on thicknesses of insulation to meet these requirements can be found TIMSA Domestic and Non-Domestic Heating, Cooling and Ventilation Guide Section 7.1 (http://timsa.associationhouse.org.uk/default.php?cmd=210&doc_category=98).

5.3.2. Solar/Thermal pipe work in lofts

These must not be insulated with traditional pipe lagging; the temperatures at work on these far exceed the capabilities of traditional pipe insulation. If pipe work is found not to be insulated the installer must make the customer aware and inform the original installer who fitted the panels.

5.3.3 Pipe insulation materials

Pre-formed thermal insulating materials must be used and be applied to pipework in accordance with the manufacturer's recommendations. Where pre-formed insulation cannot be used, (e.g. two pipes clipped together or single pipe clipped to woodwork or wall), then a proprietary type of strip insulation (e.g. fibre glass strip with plastic backing) may be used. The thermal resistance of this type of installation must be the same as the equivalent pre-formed material.

NOTE: Care must be taken when using an alternative insulation material, in these situations, not to over-tighten the fixings.

5.3.4 Gaps at insulation material joints

No gaps shall be visible where the insulating material is joined. Joints must be covered with appropriate insulation tape and the length of the pipe insulation at a minimum of 500mm centres, tape should be applied in such a manner to cover the circumference of that pipe insulation at least 3 times.

5.3.5 Foreseeable mechanical strain

Additional protection shall be applied to the insulation via a suitable covering where foreseeable mechanical damage can be inflicted upon the insulating material.

5.3.6 Durability of pipe insulation

All insulation shall be properly secured. Where tape is used to secure the insulation, a good quality material should be chosen that will remain in place for several years without loosening or becoming ineffective.

5.3.7 Stop cocks and other protruding features

Stop cocks, pipework with oversized joints (e.g. “speed-fit” pipework) or other protruding features shall be insulated using either oversized pipe insulation or where this is not possible, other means providing at least the same level of insulation shall be used, e.g. spiral pipe wrap.

5.4 Insulation and draught-proofing of loft hatches

5.4.1 Required level of insulation

The loft hatch cover shall be completely insulated, as far as practical, to at least the same U-Value degree as the rest of the roof space. As a minimum, the requirements of the current building regulations/standards shall apply.

5.4.2 Suitable methods of insulating and draught-proofing Loft hatches

Loft hatches should be insulated and draught-proofed in accordance with the insulation material’s specifications or manufacturer's instructions.

5.4.3 Special requirement for blown fibrous materials

In the case of blown fibrous materials, a suitable barrier shall be provided around the loft hatch to ensure that the insulating material does not ingress into the dwelling when the loft hatch cover is opened (in line with applicable industry standards).

5.5 Access Walkways

Where an access walkway is required for access to the water tank(s)[4] or other appliances in the loft, or the client commissioned the installation of a walkway and/or storage platform, the following installation requirements apply:

[4] A walkway is required to the water tank if the tank is over one metre away from the nearest edge of the loft hatch.

5.5.1 Structural integrity of joists

Prior to fitting the new walkway, the state of repair of the existing ceiling and support joists will be determined.

The ceiling structure shall be capable of supporting the weight of the new walkway, the existing and new insulation material and the loads imposed during the installation of these measures. Otherwise a walkway shall not be installed.

5.5.2 Clearance and insulation under the walkway

The walkway area is to be cleared of all items and material except any existing insulation material laid between the joists. This should be repositioned as necessary to provide the maximum insulation under the walkway.

Check that there are no junction boxes, cables or pipes that project above the level of the ceiling joists. If possible re-route these away from the path of the new walkway.

5.5.3 Materials and minimum dimensions

Timber or flooring grade chipboard, having a minimum thickness of 18mm will be used to form the walkway. It will have a minimum width of 300mm to allow entry of the panels or boards through a normal loft hatch.

5.5.4 Path and construction

The panels will be laid from as near the loft hatch opening as possible to adjacent to the water tank or other appliance.

Where the walkway is laid across joists (i.e. the walkway runs perpendicular to the joists), all panel to panel joints shall be either on the joist line, or additional noggins shall be used.

The panels shall not extend over the bearers by more than 50mm in any direction.

5.5.5 Panel attachment

All panels will be secured to the joists, using zinc plated, countersunk screws. These must be screwed flush with the top surface of the panel, or slightly recessed.

There will be a minimum of four screws per panel. Nails must not be used as panel/board fixing.

5.5.6 Insulation around the walkway

Insulation material is to be installed underneath walkways, but never on top. Quilt material is to be laid up to the edge of the panels. Where blown material is used, arrangements must be made to retain the material off the top surface of the walkway.

5.6 Warning Label

Two copies of the label shall be fixed on two adjacent sides of the loft access to warn the householder of the dangers when entering a loft space. Particular reference is to be made to the insulation material covering the ceiling joists, [if applicable].

NOTE: These labels must be fitted, even where a new access walkway has been installed.

DANGER

CEILING JOISTS ARE COVERED BY INSULATION MATERIAL.

THE FLOOR BETWEEN THE JOISTS IS FRAGILE. IT WILL NOT CARRY YOUR WEIGHT.

YOU SHOULD NOT ENTER UNLESS A CRAWL BOARD IS PLACED ACROSS THE JOISTS.

5.7 Self-certification of "Roof Space Insulating Works"

After completion of the work, the installer shall provide a signed and stamped certificate which shall be pinned up in the roof space adjacent to the point of access.

The certificate shall contain the following information:

5.7.1 The installer company's name and registered address, as well as the name or employee number of the individual who undertook or oversaw the installation.

5.7.3 Address at which the insulation was installed.

5.7.4 The date on which the work was carried out.

5.7.5 The area of the roof space insulated in m^2.

5.7.6 The approximate proportion of the area left uninsulated, if applicable, together with a justification.

5.7.7 The material or product, including the name of the manufacturer, its thermal conductivity ($\lambda_{90:90}$) and the relevant British Standard or certificate from a UKAS-accredited third party certification body used for insulating:

(a) the roof space;

(b) the cold water tank;

(c) the pipe work;

(d) the loft hatch.

5.7.8 The installed [average] thickness in mm of all the materials for:

(a) the roof space (settled thickness for blown materials);

(b) the cold water tank;

(c) the pipe work;

(d) the loft hatch.

5.7.9 The materials or products used for the lid of the cold water tank, the name of the manufacturer and the relevant British Standard or certificate from a UKAS-accredited third party certification body.

5.7.10 Advice on the action to be taken if the insulation material becomes damaged or wet.

5.7.11 The certificate shall also contain the following comment:

The insulation fitted in the loft is an integral part of the building energy efficiency provision and should not be removed or disturbed unless for essential work. If such work is undertaken and the insulation has to be moved it should be carefully replaced in its original position, particular care should be made to maintain any ventilation paths especially at the eaves.

Appendix 1: required thicknesses for achieving target U-Values:

The following table specifies the required thickness of the various materials to achieve target U-Values of 0.16W/(m²K) as required by the 2010 building regulations.

Note: U-values shall be calculated using the conventions and methods set out in BR443 [7]. Indicative thicknesses required for specific insulation materials can be seen in the table below. Any required thickness T (in millimetres) can be estimated from the target U-Value U (in W/(m²K)) and the respective material's thermal conductivity k (in W/mK) by using the following formula:

$$T\ [mm] = 1/U * k * 1000$$

Material	Density [kg/m³]	Thermal Conductivity (k) [W/mK]	Nominal Required Thickness [mm]
Mineral wool rolls or slabs (BS EN 13162:2012)	12	0.044	275
	18	0.040	250
	25	0.035	220
Blown glass fibre (BS EN 13162:2012)	15	0.044	275
Blown cellulose fibre (BS 5803 Part 3)	25	0.040	250
Phenolic foam board (BS EN 13166:2012)	30	0.021	131
Polyurethane board (BS EN 13165:2012)	30	0.025	156
Urea formaldehyde (UF) FOAM	10	0.040	250
Spray applied rigid closed-cell polyurethane (PUR) insulation	30	0.030	188
Expanded polystyrene (EPS, BS EN 13163:2012)	25	0.035	219

For all materials: Where a certification document (e.g. BBA approval or other certificate from a UKAS-accredited third party certification body) gives a different k value than the table above, the certificate should have priority.

For materials not listed in the table (e.g. sheep's wool or polyester), please refer to the relevant certification documents (e.g. BBA approval or other certificate from a UKAS-accredited third party certification body) for thermal conductivity. Indicative required thicknesses can be calculated using the formula above, but this cannot replace $\lambda_{90:90}$ calculations in accordance with BR443.

Appendix 2: Index of Industry Standards

Reference: Section 3.3 Suitable materials for loft insulation

The following list is informative only, and not binding or comprehensive. New standards may have been published, and/or standards may have been superseded or updated since the release of this general requirements and guidance.

Mineral wool rolls and slabs

- BS EN 13162:2012: Thermal insulation products for buildings. Factory made mineral wool (MW) products. Specification
  (confirmed current on 23/05/2013)

Blown mineral wool granules or pellets

- BS EN 14064-1:2010: Thermal insulation products for buildings. In-situ formed loose-fill mineral wool (MW) products. Specification for the loose-fill products before installation
- BS EN 14064-2:2010: Thermal insulation products for buildings. In-situ formed loose-fill mineral wool (MW) products. Specification for the installed products

  (both confirmed current on 23/05/2013)

Blown cellulose fibre

- BS 5803-3:1985: Thermal insulation for use in pitched roof spaces in dwellings. Specification for cellulose fibre thermal insulation for application by blowing
- BS 5803-4:1985: Thermal insulation for use in pitched roof spaces in dwellings. Methods for determining flammability and resistance to smouldering
- BS 5803-5:1985: Thermal insulation for use in pitched roof spaces in dwellings. Specification for installation of man-made mineral fibre and cellulose fibre insulation

  (all confirmed current on 23/05/2013)
- ENs under development

Phenolic foam board

- BS EN 13166:2012: Thermal insulation products for buildings. Factory made products of phenolic foam (PF). Specification.
  (confirmed current 23/05/2013)

Wool-based batts

- No agreed industry standards available.
- BBA approval available.
- European Technical Approvals (ETAs) available via the Common Understanding of Assessment Procedure (CUAP).

Spray applied rigid closed-cell polyurethane (PUR) insulation

- No agreed industry standards currently available, but Euro Norm (EN) under development.
- BBA approval available.

Polyester fibre mats (delivered in rolls)

- No agreed industry standards available
- BBA approval available
- European Technical Approvals (ETAs) available via CUAP.

Rigid foam board

- **Polyurethane boards:**
  - BS EN 13165:2012: Thermal insulation products for buildings. Factory made rigid polyurethane foam (PUR) products. Specification
    (confirmed current on 23/05/2013)
  - BS 4841, 2006, parts 1 to 6
    (confirmed current on 23/05/2013)
- **Expanded polystyrene (EPS) boards**
  - BS EN 13163:2012: Thermal insulation products for buildings. Factory made products of expanded polystyrene (EPS). Specification
    (confirmed current on 23/05/2013)
- **Extruded polystyrene (XPS) boards**
  - BS EN 13164:2012: Thermal insulation products for buildings. Factory made products of extruded polystyrene foam (XPS). Specification
    (confirmed current on 23/05/2013)

Appendix 3: Other referenced Industry Standards (informative)

As with Appendix 2, the following list does not claim to be binding or comprehensive. Particularly, standards may have been updated or superseded.

[1] BS 5250:2011: Code of practice for control of condensation in buildings.
(confirmed current on 2011-11-30)

[2] BS EN 13501-1:2007+A1:2009: Fire classification of construction products and building elements. Classification using test data from reaction to fire tests
(confirmed current on 2011-02-09)

[3] BS EN 60598-1:2008: Luminaires. General requirements and tests
BS EN 60598-2-2:2012: Luminaires. Particular requirements. Recessed luminaires
(confirmed current 23/05/2013)

[4] BS 5422:2009: Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C
(confirmed current on 2011-01-05)

[5] BS 8558:2011: Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their cartilages. Specification (confirmed current on 2011-01-05)

[6] BS 7181:1989: Specification for storage cisterns up to 500 L actual capacity for water supply for domestic purposes
(confirmed current on 2011-01-05)

[7] BRE 2006: Conventions for U-value calculations, 2006 edition.
Author: Brian Anderson, BRE Scotland
http://www.bre.co.uk/filelibrary/pdf/rpts/BR_443_%282006_Edition%29.pdf
(accessed 2011-06-21)

