

Building Control
Guidance
On
Thermal Insulation



Guidance on Thermal Insulation

The purpose of this note is to highlight the main requirements of Approved Document L1B Conversion of Fuel and Power. It is only intended to cover domestic applications.

Exempt buildings

A number of previously exempt buildings will now be subject to the energy efficiency requirements of the regulations and will require a Building Control Application. In practice this means an agricultural building or other previously exempt stand alone building over 50m² that uses energy to condition the indoor climate will need to demonstrate compliance with the regulations in terms of energy efficiency only. Please contact your Building Control Office for more information.

Work to existing dwellings

For extensions to domestic properties the principal approach stays the same in that you may still follow the elemental approach to demonstrate compliance. However, a number of the U-value levels have been improved. See table 1.

Where it is difficult to demonstrate compliance using the elemental approach then there are two optional approaches.

The area weighted U-value. This will allow simple trade offs between elements providing certain standards are met.

A SAP 2005 calculation can be used to show that the calculated CO₂ emission rate from the dwelling with its proposed extension is no greater than for the dwelling plus a notional extension of the same size built to the new elemental standard.

If improvements are proposed to the existing dwelling, in order to show compliance with the SAP calculation, then the improvement should be to the new standard for existing thermal elements as outlined in Approved Document L1B.

Table 1 – Elemental U-values

Element	U-value
Wall	0.30
Pitched roof – insulation at ceiling level	0.16
Pitched roof – insulation at rafter level	0.20
Sloping parts in a room in roof	0.20
Pitched roof with integral insulation	0.20
Flat roof	0.20
Floors	0.22
Windows and rooflights	1.8
Doors – more than 50% glazed	2.2
Other doors	3.0
Maximum area of windows & doors	25% of floor area plus area of existing openings no longer exposed

If the extension is a non-exempt conservatory or has a large amount of glazing then will be required the following:

- a) Thermal separation from the existing dwelling, and
- b) Independent temperature and on/off controls to any heating system. Any heating appliance must comply with the Approved Document on efficiency and controls, and
- c) Glazed elements must meet the required U-value.

If thermal separation is not provided between the conservatory/dwelling then it will be treated as a conventional extension and compliance must be demonstrated using one of the approved methods.

Renovation Work

Where an existing thermal element is being retained or renovated as part of the building work or a change of use, then the thermal element should be upgraded, wherever feasible to the required standard. The Approved Document provides guidance on the type of work where upgrading is required and the extent of upgrading expected. See table 2.

Table 2 – Renovation works

<u>Cost-effective U-value targets when undertaking renovation works to <i>thermal elements</i></u>			
Proposed works	Target U-value	Typical construction	Comments
Pitched roof construction			
Renewal of roof covering – No living accommodation in the roof void –existing insulation (if any) at ceiling level. No existing insulation, existing insulation less than 50mm, in poor condition, and /or likely to be significantly disturbed or removed as part of the planned work	0.16	Provide loft insulation – 250mm mineral fibre or cellulose fibre as quilt laid between and across ceiling joists or loose fill or equivalent. This may be inappropriate if the loft is already boarded out and the boarding is not to be removed as part of the work.	Assess condensation risk in roof space and make appropriate provision in accordance with the requirements of Part C relating to the control of condensation. Additional provision may be required to provide access to and insulation of services in the roof void.
Renewal of roof covering – Existing insulation in good condition and will not be significantly disturbed by proposed works. Existing insulation thickness 50mm or more but less than 1000mm	0.20	Top-up loft insulation to at least 200mm mineral fibre or cellulose fibre as quilt laid between and across ceiling joists or loose fill or equivalent	Assess condensation risk in roof space and make appropriate provision in line with the requirements of Part C relating to the control of condensation. Additional provision may be required to provide insulation and access to services in the roof void
Renewal of the ceiling to cold loft space. Existing insulation at ceiling level removed as part of the works	0.16	Provide loft insulation – 250mm mineral fibre or cellulose fibre as quilt laid between and across ceiling joists or loose fill or equivalent	Assess condensation risk in roof space and make appropriate provision in accordance with the requirements of Part C relating to the control of condensation.
Renewal of roof covering – Living accommodation in roof space (room-in-the-roof- type of arrangement), with or without dormer windows	0.20	Cold structure – insulation placed between and below rafters. Warm structure – insulation placed between and above rafters	Assess condensation risk and make appropriate provision in accordance with the requirements of Part C relating to the control of condensation.

Dormer window constructions			
Renewal of cladding to side walls	0.35	Insulation placed between and/or fixed to outside of wall studs. Or fully external to existing structure depending on construction	Assess condensation risk and make appropriate provision in accordance with the requirements of Part C
Renewal of roof covering	-	Follow guidance on improvement to pitched or flat roof as appropriate	Assess condensation risk and make appropriate provision in accordance with the requirements of Part C
Flat roof constructions			
Renewal of roof covering – Existing insulation, if any, less than 100mm, mineral fibre, or in poor condition and likely to be significantly disturbed or removed as part of the planned work	0.25	Insulation placed between and over joists as required to achieve the target U-value – Warm structure	Assess condensation risk and make appropriate provision in accordance with the requirements of Part C
Renewal of the ceiling to flat roof area. Existing insulation removed as part of the works.	0.25	Insulation placed between and to underside of joists to achieve target U-value	Assess condensation risk and make appropriate provision in accordance with the requirements of Part C

Heating

If the building work includes the extension or installation of a new heating appliance then the efficiency of that appliance must be:

- a) not less than that recommended for its type in the Domestic Heating Compliance Guide; and
- b) be no worse than that of the appliance being replaced.

Internal lighting

Reasonable provision would be to provide in the areas affected by the building work, fixed energy efficient light fittings that number not less than the greater of:

- a) one per 25m² of dwelling floor area (excluding garages) or part thereof; or
- b) one per four fixed lighting fittings.

External lighting

When providing fixed external lighting reasonable provision should be made to enable effective control and/or the use of efficient lamps such that:

- a) EITHER: Lamp capacity does not exceed 150 Watts per light fitting and the lighting automatically switches off:
 - I. When there is enough daylight; and
 - II. When it is not required at night; or
- b) The lighting fittings have sockets that can only be used with lamps having an efficacy greater than 40 lumens per circuit-watt.

Insulation of pipes and ducts

Reasonable provision would be demonstrated by insulating pipes and ducts and vessels to standards that are not worse than those set out in the [Domestic Heating Compliance Guide](#)

For further advice on the types of insulation available we have collated some of the more popular manufactures:

[Rockwool Insulation](#)

[Kingspan Insulation](#)

[Celotex Insulation](#)

For further information please contact the duty Building Control Surveyor who is available each day from 1pm – 5pm (4:30pm on Fridays)

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