ONLINE VERSION

HM Government

The Building Regulations 2010

Conservation of fuel and power

L1B

APPROVED DOCUMENT

L1B Conservation of fuel and power in existing dwellings

In effect from 1 October 2010

2010 edition
incorporating further 2010 and 2011 amendments

ONLINE VERSION

ONLINE VERSION

the element should also be interpreted in the context of whether the element is being renovated from inside or outside, e.g. if removing all the plaster finish from the inside of a solid brick wall, the area of the element is the area of external wall in the room. If removing external render, it is the area of the elevation in which that wall sits.

*This means that if all the roofing on the flat roof of an extension is being stripped down, the area of the element is the roof area of the extension, not the total roof area of the **dwelling**. Similarly, if the rear wall of a single-storey extension was being re-rendered, it should be upgraded to the standards of Table 3 column (b), even if it was less than 50 per cent of the total area of the building elevation when viewed from the rear. If plaster is being removed from a bedroom wall, the relevant area is the area of the external wall in the room, not the area of the external elevation which contains that wall section. This is because the marginal cost of dry-lining with insulated plasterboard rather than plain plasterboard is small.*

5.9 If achievement of the relevant U-value set out in column (b) of Table 3 is not technically or functionally feasible or would not achieve a ***simple payback*** of 15 years or less, the element should be upgraded to the best standard that is technically and functionally feasible and which can be achieved within a ***simple payback*** of no greater than 15 years. Guidance on this approach is given in Appendix A.

5.10 When renovating ***thermal elements***, the work should comply with all the requirements in Schedule 1, but particular attention should be paid to Parts F and J.

RETAINED THERMAL ELEMENTS

5.11 Part L of Schedule 1 to the Building Regulations applies to retained ***thermal elements*** in the following circumstances:

a. where an existing ***thermal element*** is part of a building subject to a material change of use;

b. where an existing element is to become part of the thermal envelope where previously it was not, e.g. as part of a loft or garage conversion where the space is now to be heated.

5.12 Reasonable provision would be to upgrade those ***thermal elements*** whose U-value is worse than the threshold value in column (a) of Table 3 to achieve the U-values given in column (b) of Table 3 provided this is technically, functionally and economically feasible. A reasonable test of economic feasibility is to achieve a ***simple payback*** of 15 years or less. Where the standard given in column (b) is not technically, functionally or economically feasible, then the ***thermal element*** should be upgraded to the best standard that is technically and functionally feasible and delivers a ***simple payback*** period of 15 years or less. Generally, this lesser standard should not be worse than 0.7 W/m².K.

Examples of where lesser provision than column (b) might apply are where the thickness of the additional insulation might reduce usable floor area of any room by more than 5 per cent or create difficulties with adjoining floor levels, or where the weight of the additional insulation might not be supported by the existing structural frame.

5.13 When upgrading retained ***thermal elements***, the work should comply with all the requirements in Schedule 1, but particular attention should be paid to Parts F and J.

Table 3 **Upgrading retained thermal elements**

Element[1]	(a) Threshold U-value W/m²·K[8]	(b) Improved U-value W/m²·K[8]
Wall – cavity insulation[2]	0.70	0.55
Wall – external or internal insulation[3]	0.70	0.30
Floor[4,5]	0.70	0.25
Pitched roof – insulation at ceiling level	0.35	0.16
Pitched roof – insulation between rafters[6]	0.35	0.18
Flat roof or roof with integral insulation[7]	0.35	0.18

1 'Roof' includes the roof parts of dormer windows and 'wall' includes the wall parts (cheeks) of dormer windows.

2 This applies only in the case of a wall suitable for the installation of cavity insulation. Where this is not the case, it should be treated as 'wall – external or internal insulation'.

3 A lesser provision may be appropriate where meeting such a standard would result in a reduction of more than 5% in the internal floor area of the room bounded by the wall.

4 The U-value of the floor of an extension can be calculated using the exposed perimeter and floor area of the whole enlarged building.

5 A lesser provision may be appropriate where meeting such a standard would create significant problems in relation to adjoining floor levels.

6 A lesser provision may be appropriate where meeting such a standard would create limitations on head room. In such cases, the depth of the insulation plus any required air gap should be at least to the depth of the rafters, and the thermal performance of the chosen insulant should be such as to achieve the best practicable U-value.

7 A lesser provision may be appropriate if there are particular problems associated with the load-bearing capacity of the frame or the upstand height.

8 Area-weighted average values.

ONLINE VERSION

RECTICEL insulation

Eurothane® GP

Product Guide

PIR Insulation for Pitched Roofing, Flooring and Framed Walls.

...a better way

Framed Walls

Wall / Pitched Roof, Eaves Detail - Figure 14.

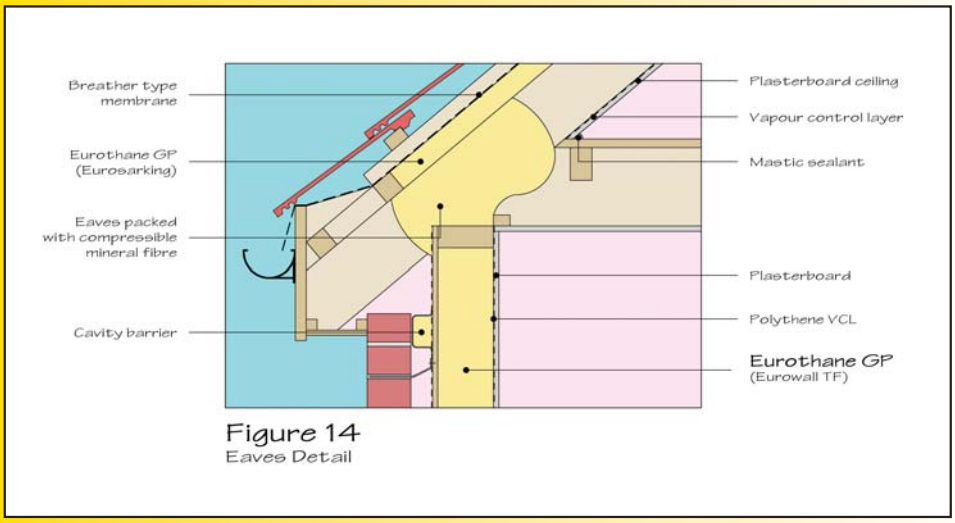

Figure 14
Eaves Detail

Heat loss calculations.

Description.

The method of calculating U-values is the Combined Method (see BS EN ISO 6946) which as well as assessing the thermal bridge effect of mortar joints, timber/metal studs etc also accounts for air gaps in the insulation and mechanical fasteners penetrating the insulation. The Building Regulations no longer use the Elemental U-value Method as a means of showing compliance. In new build a U-value in the region of 0.25 W/m^{2}K will help ensure compliance whilst in extensions and refurbishment work a U-value of 0.30 W/m^{2}K is required. The Building Regulations (Scotland) require a U-value of 0.27 W/m^{2}K.

Between Studs	
Eurothane GP Thickness (mm)	U-Value (W/m^{2}K)
60	0.34
70	0.31
80	0.29
90	0.27
100	0.25
120	0.22
140	0.19
160	0.18
175	0.17

Typical Construction:
103mm brick • 50mm clear cavity • Breather membrane • 9mm OSB sheathing • Recticel Eurothane GP 25mm (min.) stud cavity • 12.5mm plasterboard & Skim • Timber frame proportion of 15%

Insulated Sheathing - Timber Frame	
Eurothane GP Thickness (mm)	U-Value (W/m^{2}K)
30	0.37
40	0.32
50	0.28
60	0.26
70	0.23
80	0.21
90	0.19
100	0.18
110	0.17
120	0.16

Typical Construction:
103mm brick • 50mm clear cavity • Recticel Eurothane GP • 9mm OSB sheathing • Stud cavity 12.5mm plasterboard & Skim • Helical stainless steel wall ties

Insulated Sheathing - Metal Frame	
Eurothane GP Thickness (mm)	U-Value (W/m^{2}K)
30	0.39
40	0.33
50	0.29
60	0.27
70	0.24
80	0.22
90	0.20
100	0.19
110	0.17
120	0.16

Typical Construction:
103mm brick • 50mm clear cavity • Recticel Eurothane GP • Metal stud cavity • 12.5mm plasterboard & Skim • Stainless steel screws having a thermal conductivity of 17.0 W/mK, cross sectional area of 10.75mm^2 and fixed at a density of 4/m^2 are used to secure the wall ties.