

Building Control Guidance Leaflet 12

Conservation of Fuel & Power - Guidance for designers

Environmental Services Department



The 2006 edition of Part L came into force on 6 April 2006. The new requirements aim to provide a 20% improvement in carbon emissions from buildings compared to the previous 2002 edition. This follows from the UK Government's commitment to meet the European Union's Energy Performance of Buildings Directive which was introduced to combat the threat of global warming.

Part L is now published in four parts:

- L1A New Dwellings
- L1B Existing Dwellings (including extensions)
- L2A New Buildings other than dwellings
- L2B Existing Buildings other than dwellings

There are exceptions to the above, for example certain large extensions will be required to comply with the requirements for new buildings, flats and apartments must satisfy L1 but common parts of buildings containing flats or apartments will be required to comply with L2. The actual requirements and means of showing compliance with the principle regulations differ in each document.

Significantly, the familiar elemental method of compliance has been largely removed from this latest edition. Therefore, it is no longer possible to demonstrate compliance with Part L (other than for work on existing dwellings) by simply specifying minimum U values for thermal elements. It is recognised that the fixed services installed in buildings, lighting, heating, air conditioning and mechanical ventilation, consume significant amounts of energy and this edition of Part L pays more attention to these features than previous editions. Other aspects covered in greater detail in the new documents include the prevention of solar overheating and the testing of air-tightness of buildings.

Considerably more detail will be required to demonstrate compliance with these new requirements than with previous editions of Part L. This will include the provision of SAP 2005 (Standard Assessment Procedure 2005) or SBEM (Simplified Building Energy Model) calculations.

The 2006 edition also introduces requirements to improve the U value of existing thermal elements (walls, floors, roofs) when works of alteration or renovation are carried out to those thermal elements. For example when recovering a roof or re-building or substantially re-plastering an external wall. (Table A1 of document L1B provides details of cost effective U value targets when undertaking renovation works to thermal elements).

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The following tables contain details of typical constructions which may satisfy some of the requirements of the new documents. Other satisfactory products and specifications are available.

Typical construction details to satisfy Regulation L1 B for new thermal elements for **extensions** to dwellings.

Element	U value	Typical construction
Pitched Roof: Insulation at ceiling level	0.16	Roof insulated with two layers of Crown Loft Roll 40, 100mm between ceiling joists and 170mm laid over the joists.
Pitched Roof: Insulation at rafter level	0.20	80mm Celotex GA3080Z between the rafters and 50mm GA3050Z fixed to underside of rafters (400 centres), with a plasterboard and skim ceiling below. (Additional 25x50 battens can be incorporated below rafterline before fixing plasterboard to allow space for cables); or 130mm Crown Rafter Roll 32 between the rafters and 36/9.5 Polyfoam Linerboard as internal lining. A 50mm ventilated void should exist above the Rafter Roll (rafters here would be at least 180mm deep).
Flat roof with integral insulation	0.20	Warm deck: 105mm Kingspan Kooltherm K11 Roofboard bonded to vapour control membrane and finished with bitumen built up roofing system; or Ventilated roof: 100mm Celotex Extra-R XR3000 between joists (at 400 centres) and 40mm Celotex Tuf-R GA3000 to underside of joists.
Dormer walls: Timber framed with tile hanging or pvc cladding externally.	0.3	75mm Polyfoam Raftersqueeze between studs and 36/9.5mm Polyfoam Linerboard internal lining; 100mm Mineral wool batt between studs with 36/9.5 Polyfoam linerboard internal lining; or

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Element	U value	Typical construction
		<p>65mm Kingspan Thermawall TW51 between studs and a 32.5mm Kingspan Kooltherm K18 insulated dry lining internally. (65mm insulation in traditional studding allows room for services).</p> <p>Note: 100mm Kingspan Thermawall TW51 between studs will achieve a U value of 0.27 with traditional plasterboard and skim finish but will not allow any room for services in the wall unless the studs are thicker than 100mm.</p>
External walls: Masonry walls of cavity construction with brick outer leaf.	0.3	<p>85mm Crown Dritherm and inner leaf of 100mm standard aircrete block (Celcon, Thermalite or Durox) with an internal finish of plasterboard on dabs; or</p> <p>partial fill with 45mm Kingspan TW50 (a minimum 25mm residual cavity must remain adjacent to the outer leaf), 100mm inner leaf of standard aircrete block and an internal finish of plasterboard on dabs; or</p> <p>partial fill with 50mm Celotex Tuff-R 3000 (a minimum 25mm residual cavity must remain adjacent to the outer leaf), inner leaf of 100mm standard aircrete block and an internal finish of wet plaster.</p>
Wall between a garage and the house	0.3	215 lightweight aircrete (Celcon Solar/Thermalite turbo) lined with 37.5/12.5 Kingspan Kooltherm K18 Dry-lining board.
Ground Floor. Note: The thickness of insulation required will vary dependent on the shape and size of the floor (the P/A ratio).	0.22	<p>Traditional solid concrete floor construction insulated with 75 +35 mm Polyfoam Floorboard Standard insulation; or</p> <p>140mm Jabfloor 70; or</p> <p>80mm Celotex Tuff-R.</p>
Floor over a garage	0.22	<p>200mm Rocksilks Flexible slab between joists; or</p> <p>100mm mineral wool quilt between joists with 80mm Celotex tuff-R 3000 above that.</p>

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Element	U value	Typical construction
Windows, roofwindows and rooflights.	1.8 or window energy rating band D or Centre pane 1.2	The U value of any window depends on both the actual frame construction and the glazing units. Large manufacturers will have their products tested and can provide accredited certification of the actual U value achieved. A simple solution would be to specify double glazed units (4-16-4) incorporating Pilkington K glass with <u>a centre pane value of 1.2.</u>
Doors with more than 50% of internal face glazed	2.2 or Centre pane 1.2	Refer to manufacturers specification (backed by UKAS accreditation)
Other doors.	3.0	Refer to manufacturers specification (backed by UKAS accreditation)

Useful websites for Part L 2006:

Approved Documents

www.communities.gov.uk/index.asp?id=1164177

Air Tightness Testing and Measurement

www.attma.org/member_list.htm

BRE Certification

www.brecertification.co.uk/

Federation of Authorised Energy Rating Organisations (SAP Assessors)

www.faero.co.uk

SAP 2005 for dwellings up to 450m²

www.bre.co.uk

SBEM (Simplified Building Energy Model)

www.ncm.bre.co.uk/

SEDBUK (Boiler efficiency data)

www.sedbuk.com/

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Products/suppliers

Celotex

www.celotex.co.uk

Jablite

www.jablite.co.uk/adl/

Kingspan

www.insulation.kingspan.com/envivo/default.htm

Knauf Insulation

www.knaufinsulation.co.uk/

Rockwool

www.rockwool.co.uk/sw47799.asp

Sheffield Insulations

www.sheffins.co.uk

Celcon

celcon.co.uk/

Tarmac

www.topblock.co.uk/

Thermalite

www.thermalite.co.uk/default.aspx