



Material Datasheet

PART L

Use of ReadyBlock[®] for compliance with the 2006 Edition of the Building Regulations (England and Wales) – Conservation of Fuel and Power

Part L1A – New dwellings

Part L1B – Existing dwellings

Part L2A – New buildings other than dwellings

Part L2B – Existing buildings other than dwellings

BASIC REQUIREMENTS TO BE MET

Part L1 of the Building Regulations (England and Wales) defines the requirements for the design of new dwellings and the conversion/extension of existing dwellings so as to provide reasonable provision for the conservation of heat and power.

Part L2 of the Building Regulations (England and Wales) defines the requirements for the design of new buildings other than dwellings and the conversion/extension of existing buildings other than dwellings so as to provide reasonable provision for the conservation of heat and power.

Despite the above separation being of dwellings from non-dwellings, the approach differences are actually between *new-build* and *conversion/extension*.

TO MEET THE REQUIREMENTS FOR NEW-BUILD

1) At the design stage

The 2006 regulations no longer approve the use of the Elemental or Target U-value processes to achieve compliance. The only way to show compliance is the achievement of a **TER** (Target CO₂ Emissions Rate).

Calculation processes called **SAP procedures** are used at the design stage to combine together all factors that can influence the heating requirements of the building. These are – building size and shape, insulation performance, size and type of windows, space and water heating systems/controls/ fuel type and building air tightness. The SAP procedures can be calculated manually but they are normally conducted by architects or insulation suppliers and installers using proprietary software.

To calculate what the TER is for a proposed construction, the following SAP calculations must be followed

- a) The SAP from the Part L 2002 is applied to a 'benchmark' notional basic building to calculate a **DER** (Dwelling CO₂ Emission Rate) if constructed under the 2002 Part L.
- b) The DER from (a) then has the 2005 Part L SAP procedure applied to achieve a further saving in CO₂ emissions of at least 20%. The resultant DER is then the **TER** (Target CO₂ Emission Rate) which the building must achieve to comply with building regulations.

Once the TER has been set for the proposed construction the SAP calculations require repeating using the particular details and features being specified to check that in theory the target TER will be complied with.

In addition to the basic thermal efficiency of the design, Part L also requires designers to:

- a) Use design features which are within minimum reasonable efficiency parameters. In the case of external walls a maximum U-value of 0.35W/m²K is the limit.
- b) Use appropriate design features such that high internal temperature due to excessive solar gain is avoided. This is to limit the need for fuel-consuming air conditioning systems.
- c) Provide operation and maintenance instructions to the building owner as to how to correctly and efficiently use the building.

So far as external walls are concerned, the upshot of the above design and approval procedures is that the U-value requirements will almost always fall somewhere within the range of 0.25 – 0.30W/m²K. The exact figure will depend on the detail design.

2) At the construction Stage

Inappropriate construction detailing or poor workmanship can result in a theoretically acceptable design becoming non-compliant on completion. This is due to thermal bridging and air leakage paths. Thermal bridging will be checked for during construction and excessive air leakage will be shown up by mandatory air pressure testing, as demanded by the regulations and required by the local authority. This site testing must be carried out by a contractor approved by the ATTMA (Air Tightness Testing and Measurement Association).

Use of Accredited Construction Details (ACD's) will result in a reduced number of site tests being required.

TO MEET THE REQUIREMENTS FOR REFURBISHMENT AND EXTENSIONS

1) DWELLINGS

The 2006 Regulations allow a considerably simpler elemental approach to be taken to extensions/material alterations and change of use situations.

The requirements for walls being:

Constructional Element	Required U-Value
Newly built walling (Cavity or Other Type)	0.30 (W/m ² K)
Replacement walling (Cavity or Other Type)	0.35* (W/m ² K)
Upgraded but retained walling (Cavity)	0.55** (W/m ² K)
Upgraded but retained walling (Other Type)	0.35 (W/m ² K)
Renovated walling (Cavity or Other Type)	0.35* (W/m ² K)

* A lesser requirement may be allowed if more than 5% of internal floor area bounded by the wall would be lost.

** This value is stated to allow compliance where the cavity can be filled with insulation. If any other design is proposed then the compliant value is changed to 0.35.

2) Non-Dwellings

Requirements are as in (1) above, with the following additional factors:

- 1) Where the building being developed is in excess of 1000m² of floor area, the development must be treated as new-build.
- 2) Where the building work is an extension in excess of 100m² and it represents in excess of 25% of the floor area of the existing building, then the development must be treated as new-build.

TO ACHIEVE A STIPULATED U-VALUE FOR A WALL USING READYBLOCK[®]

Whatever U-value is demanded by the above processes, the actual wall construction chosen will be a compromise based on the aesthetic requirements of the building and the type of insulation system to be used.

The basic wall structure of external leaf, cavity, internal leaf and plaster/render finishes is a long way from complying with a U-value between 0.25 and 0.35W/m²K. A compliant U-value is reached by adding insulating materials to either the external wall surface, the cavity or the internal surface; or a combination of these locations.

The most common forms of insulation are cavity lining with low emissivity thermal boards and full cavity fill with rigid or semi-rigid fibrous batts. The thicker the insulation layer is the lower the U-value obtained, so theoretically to achieve a compliant wall you simply choose the required thickness of insulation. However in some situations it is advantageous to choose to use lighter-weight blocks and/or thermal plasterboard systems as their enhanced thermal performance can reduce the required thickness of the main insulation.

CEMEX technical staff can advise on product selection and carry out U-value calculations.

**For more information contact our ReadyBlock[®] Helpline
Tel: 0800 667 827.**