

Rochford District council

Building Control

Extensions and Alterations Guidance Booklet for the new Building Regulations coming into effect In June 2022



The new building regulations will come into force for applications made on or after 15 June 2022. The new requirements will not apply to applications made prior to June 15' providing substantial building work has begun before 15 June 2023 on the application.

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Approved Document L & F - some of the main changes as of June 2022

Approved Document L – Extensions & alterations main changes

1. New thermal elements, replacement thermal elements and glazing need to meet new U-Values. (See Table 4.2, paragraph 4.7 in Approved Document L)
2. Less than 25% maximum glazing for the floor area of extensions including covering existing controlled openings still applies, however, it is now slightly more onerous. Once over 25%, energy calculations such as area weighted U-value or SAP calculations are required. Specifying a highly glazed extension will always require design calculations prior to starting works. This also includes new glazing in existing buildings, extending openings for bi-folding doors, etc. if 25% glazing of the total floor area of the dwelling is exceeded. (See paragraph 10.10 in Approved Document L)
3. Boiler efficiency should be assessed when extending the heating system and the system may be required to be upgraded to a 92% efficient boiler. (See Table 6.2 in Approved Document L)
4. Renovating thermal elements still applies but with extra clarification. Most U-values stay the same however replacing a flat roof membrane will require insulation upgrades. (See Paragraph 11.2 in Approved Document L)

Approved Document F – Extensions & Alterations noteworthy changes

1. Night latches cannot be used in place of trickle vents. (Part F, paragraph 1.52)
2. Open plan kitchen diners need minimum of 3 trickle vents in a room (8000mm² each). (Part F, Paragraph 1.52)
3. Minimum requirement for trickle vents now 8000mm² for habitable rooms or 10,000mm² for single storey dwellings. (Part F Table 1.7)
4. Exposed Façades in busy areas (main road etc) will require noise attenuating trickle vents. (Paragraph 1.54 Part F)
5. Existing home ventilation guides required to be given to the homeowner by the builder. (Explaining how to use and ventilate efficiently etc) (Paragraph 4.20 Part F)
6. All replacement windows must have trickle vents regardless of if the previous windows did not. (Paragraph 3.15)
7. Energy efficiency measures in existing homes means the ventilation of dwelling will be assessed. Doing multiple minor works (Insulating lofts, replacing loft hatches etc.) or major work (bricking up chimneys, installing internal wall insulation etc.) will now require ventilation retrospectively and in some cases, you will require a ventilation report to specify new ventilation requirements. In most cases retrofitting trickle vents will be an adequate method. (Table 3.1, para 3.6-3.13)

U-Value table highlighting changes as of June 2022

Note: New thermal elements may need higher values if you have more than 25% glazing.

THERMAL ELEMENT	OLD U-VALUE	NEW U-VALUE
New Floors	0.22 W/m ² K	0.18 W/m²K
Retained Floors	0.25 W/m ² K	0.25 W/m²K
New Cavity Walls	0.28 W/m ² K	0.18 W/m²K
Retained Cavity Walls	0.55 W/m ² K	0.55 W/m²K
Retained Solid Walls 9"	0.3 W/m ² K	0.30 W/m²K
Retained Single Skin Walls 4"	0.3 W/m ² K	0.30 W/m²K
Timber Frame Walls	0.28 W/m ² K	0.18 W/m²K
Pitched Roof (Flat Ceiling)	0.16 W/m ² K	0.15 W/m²K
Pitched Roof (Vaulted Ceiling)	0.18 W/m ² K	0.15 W/m²K
Flat Roof (Cold Deck)	0.18 W/m ² K	0.15 W/m²K
Flat Roof (Warm Deck)	0.18 W/m ² K	0.15 W/m²K
Retained Roof Upgrades		
Flat Roof	0.18 W/m ² K	0.16 W/m²K
Flat Ceiling	0.16 W/m ² K	0.16 W/m²K
Vaulted	0.18 W/m ² K	0.16 W/m²K
Windows	1.6 W/m ² K	1.4 W/m²K
External Doors >60% Glazing	1.8 W/m ² K Band E	1.4 W/m²K Band C
Other External Doors	1.8 W/m ² K Band E	1.4 W/m²K Band B
Roof Light	1.6 W/m ² K	2.2 W/m²K (New method of calculating so appears worse)

Ground floor U-Value guidance - Extensions and alterations

Below is a table of examples of insulation products that can be used to achieve the new U-values in Approved Document L as of June 2022.

This is based upon traditional oversites and beam and block floors with a Perimeter/Area (P/A) ratio of 1. Insulation thicknesses may be reduced if the P/A ratio is lower, but calculations may be required.

The values below will suffice in most circumstances, with insulation either above or below the concrete slab and in floating floor scenarios.

It is now a requirement to provide a 25mm perimeter upstand of PIR insulation as standard, except for floating floors.

Table 1: Minimum U-value now required 0.18W/m²K

Product	Thickness
Celotex GA4000	100mm
Recticel Eurothane Gp	100mm
Jabfloor insulation	100mm + 60mm
Ecotherm Eco-Versal	100mm
Kingspan K103	100mm

Note: To offset additional glazing, PIR insulation thickness in the floor is more likely to be specified / required to be 150mm on most jobs, rather than the 100mm you can get away with. This is because its more cost effective than increasing wall thickness etc. Timber floors may be better to insulate as a floating floor, however for insulating between joists see examples below.

Table 2: Examples of suspended timber floor. Minimum U-value now required 0.18W/m²K

Option 1	Option 2
Celotex XR4000 150mm between 150mm Timber Joists at 400cc	Rockwool Flexi 200mm between timber joists. 200mm Joists required

Cavity Wall Guidance – Extensions and alterations

Cavity walls

Below are tables of examples of insulation products that can be used to achieve the new U-values in Approved Document L as of June 2022.

This is based on a 'standard' cavity construction wall detail with a brick outer leaf and a block inner leaf. In most instances the cavity will now be greater than 100mm unless a suitable PIR cavity insulation board is used.

Please see key for ease - this includes some but not all products that can be used.

Specialist advice from architects, energy assessors and manufacturers may be required.

Table 1: U-Value now required 0.18W/m²K

Cavity width	Detail
100mm	Brickwork, 100mm cavity full fill insulation with an insulation with a thermal conductivity of 0.021 W/m²K , 100mm blockwork inner leaf with a thermal conductivity of 0.15 W/m²K , 12.5mm plasterboard finish
100mm	Brickwork, 100mm cavity full fill insulation with an insulation with a thermal conductivity of 0.032 W/m²K , 100 mm blockwork with a thermal conductivity of 0.15 W/m²K and a 52.2 insulated PIR plasterboard finish (40mm PIR + 12.5mm plasterboard)
150mm	Brickwork, 150mm cavity insulated with an insulation with a thermal conductivity of 0.032 W/m²K , 100 mm blockwork with a thermal conductivity of 0.15 W/m²K , 12.5mm plasterboard finish.
150mm	Brickwork, 150mm cavity insulated with an insulation with a thermal conductivity of 0.032 W/m²K , 150 mm blockwork with a thermal conductivity of 0.15 W/m²K , 12.5mm plasterboard finish.
150 mm	Brickwork, 150mm cavity partially filled with 100mm insulation with an insulation with a thermal conductivity of 0.022 W/m²K , 150 mm blockwork with a thermal conductivity of 0.15 W/m²K , 12.5mm plasterboard finish.
175mm	Brickwork, 175 mm cavity insulated with an insulation with a thermal conductivity of 0.037 W/m²K (Knauf/Dritherm 37), 100 mm blockwork with a thermal conductivity of 0.15 W/m²K , plasterboard finish.
180mm	Brickwork, 180mm cavity full fill insulation with Rockwool full fill cavity batts with a thermal conductivity of 0.037 W/m²K , 100mm of blockwork with a thermal conductivity up to 1.130 W/m²K (Even dense concrete blocks achieve this).

Table 2: Key for common construction products used

0.15W/m ² K blocks or better	Cavity insulation 0.02 W/m ² K	Cavity insulation 0.032 W/m ² K	Cavity insulation 0.037 W/m ² K
Celcon Solar. Celcon Standard. Durox Supablock Durox SupaBlock 400 Thermalite shield Thermalite Turbo Topblok supa bloc Toplite standard	Recticel Euro wall Celotex CW4000 All will be PIR partial / full fill cavity wall systems and workmanship will need to be impeccable.	Dritherm 32 Cavity Batts Please note most other cavity wall insulations do not achieve the same value as Dritherm 32, even other Dritherm products like 34 etc.	Rockwool Cavity batts Other Dritherm products

Note: Denser blocks are sometimes required for structural stability, this often will have a serious effect on the U-Value and will subsequently require insulation upgrades.

Timber framed wall U-Value guidance – extensions and alterations

Timber frame wall

Below is a table of examples of insulation products that can be used to achieve the new U-Values in Approved Document L as of June 2022.

This is based on a worst-case scenario with any façade detailing, including a brick outer leaf, blockwork rendered, hanging tiles, timber or cement cladding or a rendered cement board.

With a brick or rendered block façade, a better U-Value can typically be achieved meaning less insulation (potentially), but this will need site specific calculations.

Table 1: Minimum U-value now required 0.18W/m²K

Product	100mm X 47mm, 600cc studs (4x2 inch timbers)	150mm x 47mm, 600cc (6x2 inch timbers)	200 x 47mm, 600cc (8x2 inch timbers)
Kingspan Kooltherm K12	70mm between studs + 40mm lining, 12.5mm plasterboard	100mm between studs + 25mm lining, 12.5mm plasterboard	Follow 150mm x 47mm guidance
Celotex GA4000 + TB4000	100mm GA4000 between + 50 mm GA4000 lining, 12.5mm plasterboard	100mm GA4000 between + 40 mm TB4000 lining, 12.5mm Plasterboard	100mm GA4000 between + 30 mm TB4000 lining, 12.5mm plasterboard
Recticel Eurothane GP	100mm between + 50 mm insulation over + 12.5mm plasterboard	100mm between + 40 mm insulation over + 12.5mm plasterboard 150mm between + 25mm lining, 12.5mm plasterboard	100mm Between + 30mm lining, 12.5mm plasterboard
Ecotherm Eco-Versal	80mm between + 40mm lining, 12.5mm plasterboard	100mm between + 30mm lining, 12.5mm plasterboard	See 150mm X 47mm guidance
Actis hybric + Actis Hcontrol (Acts as a vapour control barrier also when taped.)	N/A	105mm of Hybris Actis between studs + 45mm HControl Hybrid quilt lining, counter battened, 12.5mm plasterboard	See 150mm x 47mm Guidance
Knauf/Rockwool between studs and PIR over	Currently little guidance given. Expected Rockwool flexi 230mm between timber frame. Frame therm Exceeding 150mm between studs. Designs will be required.		

Flat roof U-Value guidance – Extensions and alterations

Warm deck roof

Below is a table of examples of insulation products that can be used to achieve the new U-Values in Approved Document L as of June 2022.

This is based on a traditional warm deck build up with all insulation above the flat roof joists which negates the ventilation requirements.

Table 1: Minimum U-value now required 0.15W/m²K

Product	Thickness
Celotex GA4000	150mm
Recticel Eurothane Power deck / Euro deck	150mm
Ecotherm Eco-Versal	150mm
Kingspan Therma roof TR27	150mm

Cold deck roof

Below is a table of examples of insulation products that can be used to achieve the new U-Values in Approved Document L as of June 2022.

This is based on a traditional cold deck build-up of insulation between and below the flat roof joists. This solution will require adequate cross flow ventilation. Cold decks are not ideal and warm decks are preferred.

The table below assumes, as an example, 150mmx47mm joists with a 50mm ventilation void, and for the purpose of thermal values will suffice in most circumstances.

Table 2: Minimum U-value now required 0.15W/m²K

Product	Joists at 600 centres	Joists at 450 centres	Joists at 400 centres
Kingspan Kooltherm K7	100mm between joists +50mm underlining, 12.5mm plasterboard	Follow 600cc guidance	Follow 600cc Guidance
Celotex GA4000	100mm between joists +60mm underlining, 12.5mm plasterboard	100mm Between joists + 70mm underlining, 12.5mm plasterboard	Follow 450cc guidance
Recticel Eurothane GP	100mm between joists +70mm underlining, 12.5mm plasterboard	Follow 600cc guidance	100mm Between joists +75mm underlining, 12.5mm plasterboard

Ecotherm Eco-Versal	100mm between joists +60mm underlining, 12.5mm plasterboard	100mm between joist +70mm underlining, 12.5mm plasterboard	Follow 450cc guidance
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Pitched roof U-Value guidance – Extensions and alterations

Vaulted Ceilings

Below is a table of examples of insulation products that can be used to achieve the new U-Values in Approved Document L as of June 2022.

The table below assumes, as an example, 150mmx47mm rafters with a 50mm pitched roof ventilation void, thermal values will suffice in most circumstances. (Vaulted ceilings) (Insulation between and below rafters)

This is based on a pitched roof with a vaulted ceiling (no ceiling joists installed).

Table 1: Minimum U-value now required 0.15W/m²K

Product	Rafters at 600mm cc	Rafters at 450mm cc	Rafters at 400mm cc
Kingspan Kooltherm K7	100 mm between rafters + 45mm underlining, 12.5mm plasterboard	Follow 400 cc guidance	100 mm between rafters + 50mm underlining, 12.5mm plasterboard
Celotex GA4000	100 mm between rafters + 50mm underlining, 12.5mm plasterboard	100 mm between rafters + 60mm underlining, 12.5mm plasterboard	Follow 450cc guidance
Recticel Eurothane GP	100 mm between rafters + 60mm underlining, 12.5mm plasterboard	Follow 400 cc Guidance	Follow 600cc Guidance
Ecotherm Eco-Versal	100 mm between rafters + 50mm underlining, 12.5mm plasterboard	Follow 400cc Guidance	100 mm between rafters +60mm underlining, 12.5mm plasterboard
Other Options <u>indicative only</u> . Minimum U-value now required 0.15W/m ² K			
Celotex GA4000		Expect 75mm Between rafters and 75mm over rafter's at 400cc. Full design should be sought with condensation risk analysis not all PIR manufactures will allow this.	
Celotex XR4000		Expect 140mm over rafters	

TLX Silver with a PIR insulation	Around 130mm of PIR with a TLX silver underneath. Air gaps, timber size and design to be discussed
TLX Gold	145mm PIR between , TLX gold above rafter, design to be discussed.

Flat ceilings

Below is a table of examples of insulation products that can be used to achieve the new U-Values in Approved Document L as of June 2022.

This is based on the assumption that all insulation is laid between and over the ceiling joists.

This is based on a pitched roof construction with a flat ceiling, 147x47mm ceiling joists installed at 600cc.

Table 2: Minimum U-value now required 0.15W/m²K

Product	Thickness / installation
Knauf - glass mineral wool	150mm insulation between ceiling joists, 150mm laid perpendicular over the top, 300mm total
Rockwool – Thermal insulation loft roll	150mm insulation between ceiling joists, 150mm laid perpendicular over the top, 300mm total
Celotex GA4000 (Other PIR insulations options may differ slightly).	100mm insulation between joists and 60mm under+ 12.5mm plasterboard.
Actis Multifoils.	HYBRIS 140mm thickness between joists + HCONTROL HYBRID 45mm underneath with relevant air gaps.

Rochford District Council has no commercial ties with manufacturers' and is impartial. The council is not accountable for use of these table as u value calculations should always be obtained. There are many different insulation types/brands which can be used provided they are appropriate for use and meet the requirements of building regulations. This guide is based on a survey of the main products seen in our area. If a designer has specified, the insulated construction that should be followed over this guidance. U-values are set on a worse case basis. Actual manufacturers or designer's guidance may be more cost-effective. There are also more new requirements regarding new dwellings, including vehicle charging points and overheating.

