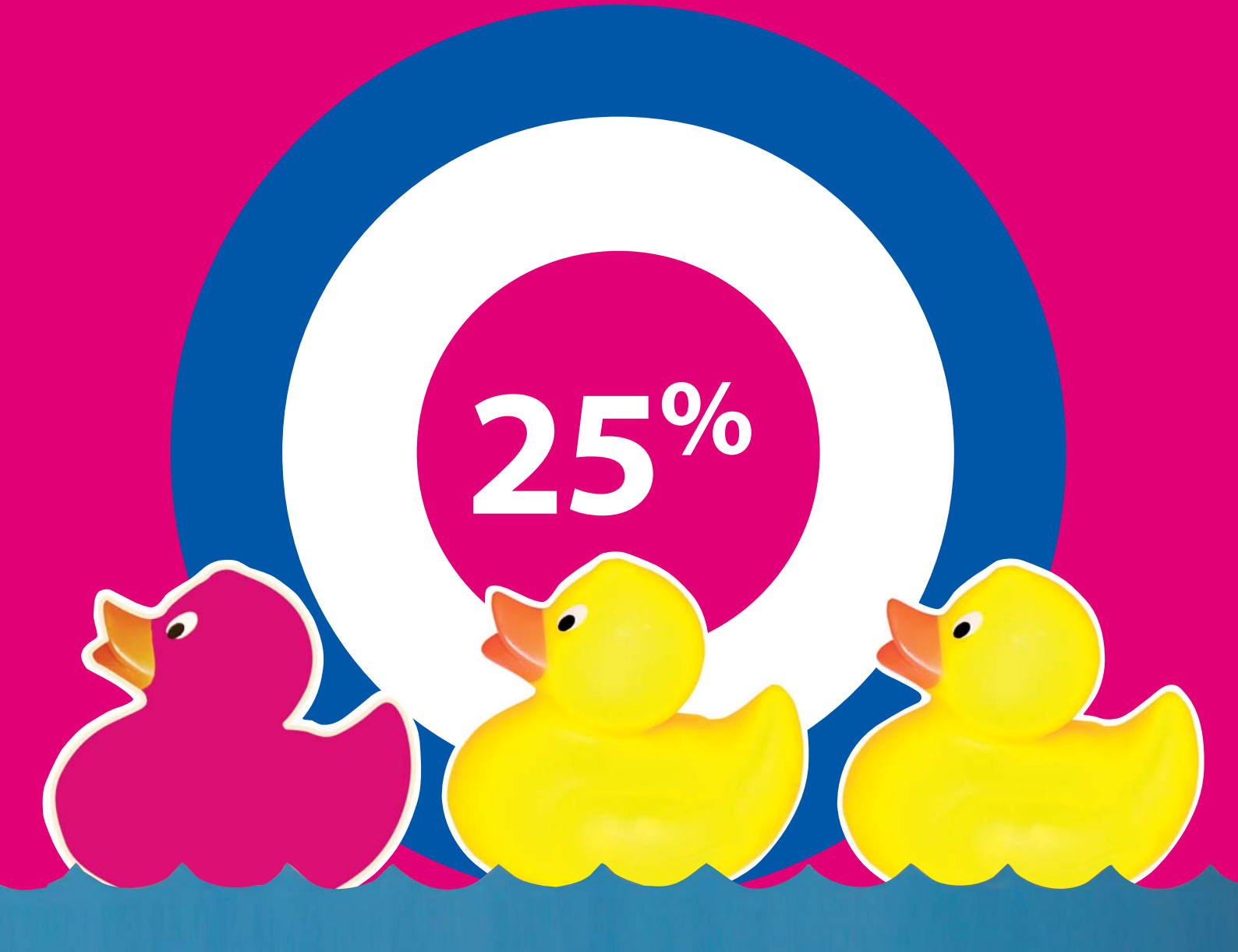
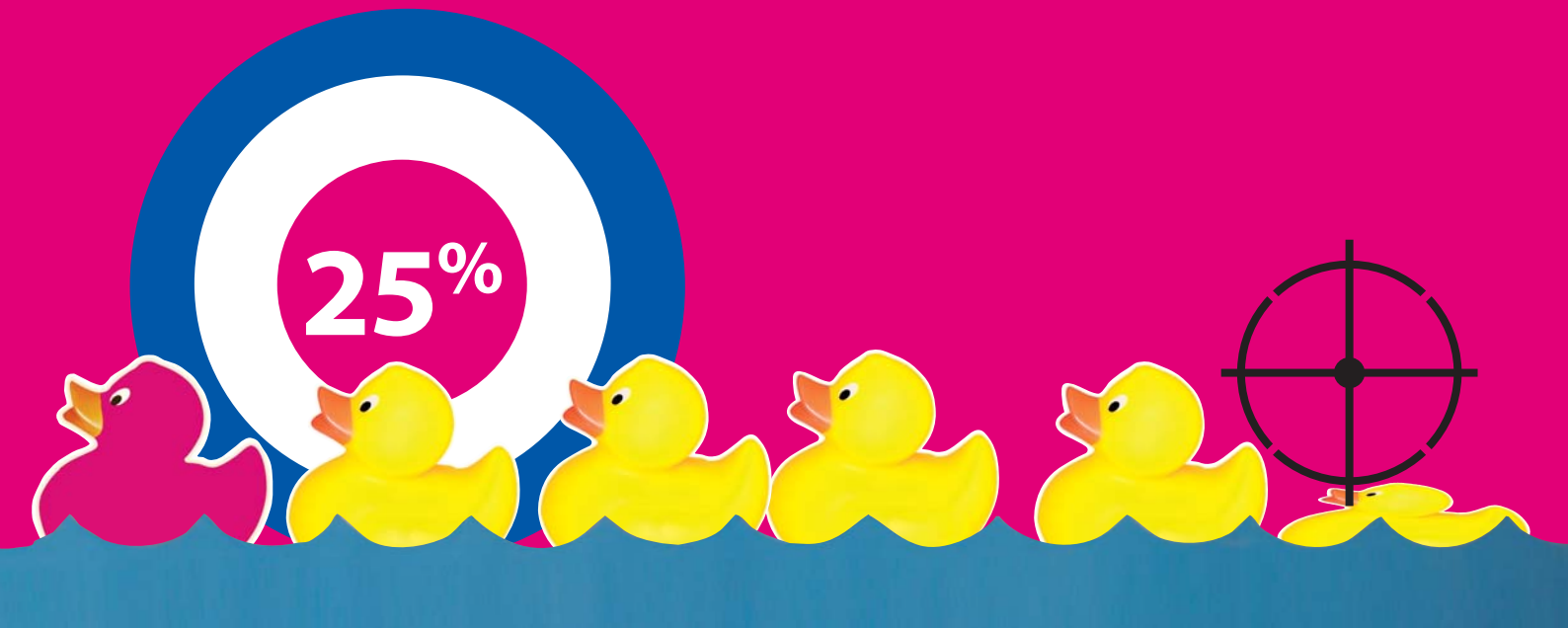
Celotex. Leading the way…



…in hitting the new Part L emissions target.



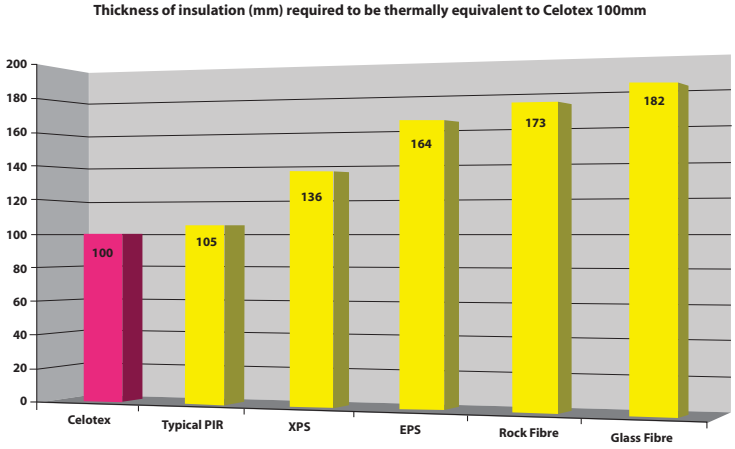
Targeting 25%

The 2010 edition of Approved Document L (Part L) calls for a 25% reduction in CO_2 emissions compared to Part L 2006.

Whilst compliance is calculated and achievable through a variety of different measures, improvements to the recommended U-value targets for 2010 show that adopting a 'fabric first' approach is the single most important measure for reducing CO_2 emissions.

Meeting the requirements of Part L will rely on achieving target U-values which are more rigorous than those in 2006. This will be achieved by selecting high performing insulation materials within the building fabric.

Thermal performance is measured by a product's lambda value. The lower the lambda, the higher the thermal performance of the insulation. The graph compares the thermal performance of some of the main insulation materials currently used to meet Part L.



Celotex PIR insulation with a super low lambda value of 0.022W/mK provides one of the most thermally efficient insulation solutions and is lower than that of typical PIR. This allows demanding U-values to be achieved with some of the thinnest possible solutions.

This brochure will discuss the advantages of using Celotex PIR insulation as the solution for achieving the requirements of Part L. It will outline the challenges of meeting lower U-values as well as comparing the thicknesses of insulation required to meet some of these U-values.

The advantages of Celotex insulation

- **Thermal performance.** Celotex offers an improved thermal performance to 0.022W/mK helping achieve better U-values and thinner solutions.
- **Low emissivity.** Celotex products are faced with third party approved aluminium foil facers. In cavity applications, this can result in thinner levels of insulation being required.
- **Thick and thin.** From 12mm right through to 200mm thick, Celotex insulation is available in a range of thicknesses unrivalled by any other PIR provider.
- **Environmental impact.** The first manufacturer of PIR insulation to achieve an A+ rating when compared to the BRE Green Guide 2008. Our environmental impact rating is approximately 20% better than typical PIR.
- **Moisture resistance.** The thermal performance of insulation materials such as phenolic is reduced when exposed to water. Celotex is a hydrophobic product meaning it does not absorb water allowing the product's thermal performance and integrity to be retained over time.
- **Fire performance.** The first PIR products to achieve a Class O fire rating.
- **Structural strength.** Celotex insulation possesses substantial inherent structural strength. This is why Celotex is used so widely in the construction sector. The core prevents the product from sagging through time ensuring it retains its thermal characteristics.
- **Weight.** Based on 100mm insulation, Celotex PIR is over 10% lighter than phenolic insulation and is nearly ten times lighter than rock fibre based on the same thermal performance.
- **Life expectancy.** Celotex products will not sag, absorb moisture or be permeated by air. Typically the product will last the full lifetime of the building. There is also no requirement for additional maintenance or treatment to Celotex boards.

The challenges of meeting Part L

Whilst the target of Part L is a 25% reduction in CO_2 emissions, this could typically lead to an increase of over 45% in the volume of insulation required to meet the new U-values compared to 2006 regulation. The new requirements of Part L bring fresh challenges to the construction industry. New methods of design, specification and build will need to be incorporated into the UK building stock to ensure this is achieved.

Just some of the key challenges include:

- **Buildability** – are current methods of construction still possible with the new regulations?
- **Practicality** – what are the changes required for constructing buildings to these new levels, what new build methods are required and is this achievable with existing resources?
- **Functionality** – will the insulation materials that are currently used meet the requirements of Part L and what are the alternatives? What are the impacts if lesser performing products continue to be adopted?
- **Space saving** – lower U-values means thicker solutions. How can lower U-values be met without compromising the space of my building and site?
- **Building economics** – how can this all be achieved in a cost effective manner?

Celotex remains one of the most cost effective insulation solutions for meeting these challenges and the increasing demands of building regulation. With improved thermal performance Celotex delivers thin solutions ensuring minimum disruption to existing construction methods. This excellent thermal efficiency also allows low U-values to be achieved without impacting on space.

Meeting Part L U-values

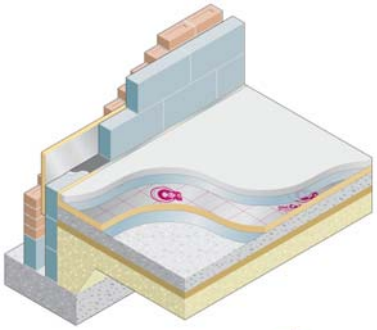
Shown below are some popular building elements along with the typical U-values that are expected to be needed to meet the requirements of Part L 2010.

For each application we have compared the thickness of insulation required to meet the target U-values using Celotex PIR with a lambda value of 0.022 against typical PIR products which only achieve a lambda value of 0.023. We have also included the thickness of insulation required from some of the other insulation materials referenced in this guide.

Floors

	Celotex	Typical PIR	EPS	Rock Fibre
Lambda (W/mK)	**0.022**	**0.023**	**0.035**	**0.038**
Target U-value			**Thickness Required**	
0.20	**75mm**	80mm	120mm	130mm
0.15	**110mm**	115mm	175mm	190mm

Build Up: Concrete slab floor with insulation over slab. 65mm screed and 20mm perimeter upstands. P/A ratio of 0.60

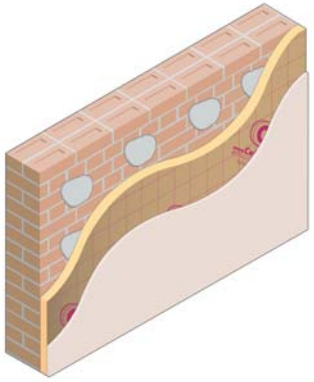


Internal solid wall

	Celotex	Typical PIR	Phenolic	XPS
Lambda (W/mK)	**0.022**	**0.027**	**0.021**	**0.030**
Target U-value			**Thickness Required**	
0.30	**60mm**	75mm	60mm	80mm
0.28	**65mm**	80mm	65mm	90mm

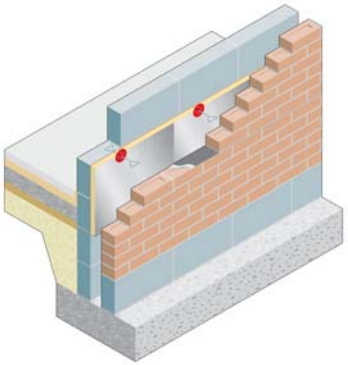
Note: Thickness stated does not include 12.5mm plasterboard.

Build Up: 215mm dense block (lambda value of 1.13W/mK) with plasterboard thermal laminate on plaster dabs.



Cavity wall

	Celotex	Typical PIR	Rock Fibre	Glass Fibre
Lambda (W/mK)	**0.022**	**0.023**	**0.037**	**0.040**
Target U-value			**Thickness Required**	
0.28	**40mm**	50mm	95mm	100mm
0.20	**75mm**	85mm	165mm	175mm



Build Up: 103mm brick outer leaf with 100mm block inner leaf (lambda value of 0.15W/mK) with plasterboard on dabs as internal finish. Celotex option includes low emissivity value of 0.665 for cavity air-space. Typical PIR thickness assumes BR443 value of 0.440.

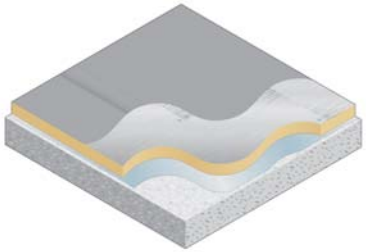
Pitched roofs

	Celotex	Typical PIR	EPS	Rock Fibre
Lambda (W/mK)	**0.022**	**0.023**	**0.036**	**0.035/0.038**
Target U-value			**Thickness Required**	
0.13	**90mm between and 90mm over**	90mm between and 95mm over	140mm between and 150mm over	140mm between and 150mm over

Build Up: Rafters at 400mm centres. Celotex option includes low emissivity value of 0.454 for cavity air-space. Typical PIR value thickness assumes BR443 value of 0.340.

Flat roofs

	Celotex	Typical PIR	EPS	Rock Fibre
Lambda (W/mK)	**0.022**	**0.023**	**0.035**	**0.038**
Target U-value			**Thickness Required**	
0.18	**115mm**	120mm	165mm	200mm



Build Up: Mechanically fixed single-ply membrane using thermally broken fixings on a concrete deck.

The thicknesses of insulation stated above are those required to meet the U-values shown, rounded up to the nearest 5mm, and are for comparison purposes only. For details of available thicknesses, please contact the relevant provider.

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* Calls are charged at 30p per minute from a BT landline and lines are open Monday – Friday from 8:00am – 5:15pm.
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We know insulation inside and out

Celotex
Insulation
Specialists