

YOUR QUICK AND EASY GUIDE TO PART L BUILDING REGS

*Choosing The Right GTEC Thermal
Plasterboard For Your Project*



THINK THERMAL VALUED PERFORMANCE



Rising energy prices and climate change are and will continue to be major problems in the coming years. One way the construction industry can help counter them is by making the existing building stock more energy efficient.

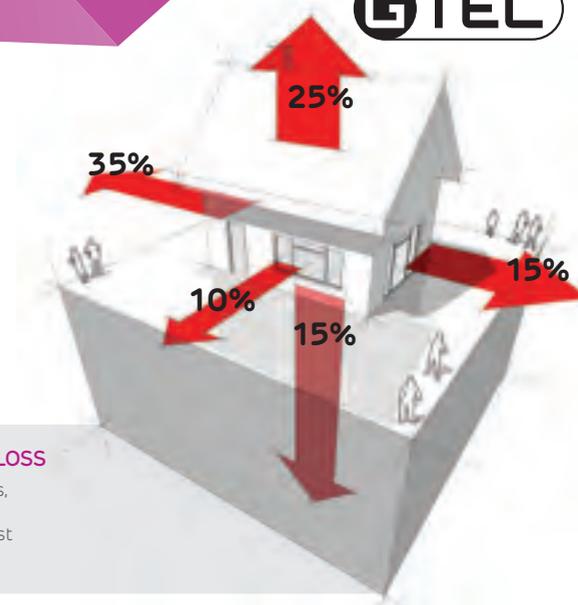
The Government is already taking steps to drive improvements in the thermal efficiency of the 25 million existing homes in the UK. As well as revisions to Part L of the Building Regulations, the Green Deal and the new ECO scheme will replace all existing initiatives, supporting a wider range of refurbishment measures.

As well as providing a boost to the energy efficiency of the country's homes, these developments are set to give the Repair Maintain and Improve (RMI) market a lift by increasing demand for insulation.

The key to taking advantage of these opportunities is to **'think thermal'** – get to know the products available, how to use them, and where and when they should be used.

THINK THERMAL VALUED PERFORMANCE

See pages 10-11 for more information on selecting the right Thermal Board.

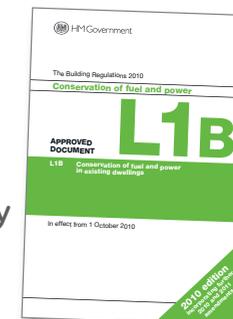


PROPORTIONAL DOMESTIC HEAT LOSS

Domestic heat can be lost through walls, roofs, floors, windows and doors. In the average home, the majority of heat is lost through walls and loft space.

PART L REGULATIONS EXPLAINED (2010)

Building Regulations are law and must be met when applied to any project over a certain size. The regulation that refers to the thermal efficiency requirements when carrying out renovation or replacement work on an existing dwelling is explained in Approved Document L1B (ADL1B).



It states what reasonable provision should be made to comply with the regulations to improve the efficiency of any thermal elements such as walls, floors or roof spaces.

1. The construction of an extension
2. Renovations – upgrading (material change of use) such as loft or garage conversions
3. Renovations – replacement of a retained thermal element

Approved Document L1B gives guidance on the compliance with the energy efficiency requirements for the following:

PART L REQUIREMENTS (2010)

1. THE CONSTRUCTION OF AN EXTENSION

To meet Part L when constructing an extension you need to meet at least the following standards:

TABLE 1: MINIMUM STANDARDS FOR NEW (OR REPLACED) THERMAL ELEMENTS*

ELEMENTS	STANDARD U-VALUE (W/m ² k)
Walls	0.28
Pitched roof - insulation at ceiling level	0.16
Pitched roof - insulation at rafter level	0.18
Flat roof or roof with integral insulation	0.18
Floors	0.22

HOW TO ACHIEVE THERMAL EFFICIENCY.

Although you are likely to need a combination of Thermal Boards and insulation within a new wall or roof construction to achieve these standards, in certain construction make-ups the best performing products in the GTEC Thermal K range can achieve these U-values alone. See page 10-11 to find out more.

2. RENOVATIONS - UPGRADING

When new layers are added to a thermal element through cladding or rendering; being drylined internally; or being stripped back to core structural components before being rebuilt then it should be upgraded.

If at least 50% of the element is being renovated then it should be upgraded to achieve the U-values in Table 2 where technically, functionally and economically feasible. An example of economic feasibility is simple payback in 15 years or less.

In the case of drylining the 50% proportion applies to the internal surface of a room not the whole external element.

TABLE 2: RENOVATIONS*

ELEMENTS	IMPROVED U-VALUE (W/m ² k)
Walls - external or internal insulation	0.30
Pitched roof - insulation at ceiling level	0.16
Pitched roof - insulation between rafters	0.18
Flat roof or roof with integral insulation	0.18

HOW TO ACHIEVE THERMAL EFFICIENCY.

Thermal boards are a highly economic means of upgrading a thermal element. Where a thermal element already includes insulation then it is entirely possible to achieve the required U-values with a GTEC Thermal Board alone. In many cases a thermal element may require only a minor improvement to achieve the targets set out in the Approved Document - something which is easily attainable with the GTEC Thermal Board range. GTEC Thermal Boards provide a quick and easy one-fix smooth re-surfacing of an element. Higher grades of GTEC Thermal Board should be used to achieve better U-values without losing as much space in the renovated room. See page 10-11 to find out more.

3. RENOVATIONS - REPLACEMENT

Where a thermal element is becoming part of a dwelling through material change of use, such as a loft or garage conversion, or where an element is becoming part of the thermal envelope, then it must also be upgraded.

If the element currently performs worse than the values in Column A (Table 3) then it should be upgraded to achieve the U-values in Column B (Table 3) where technically, functionally and economically feasible. If the U-value in Column B (Table 3) is not economically feasible then it should be upgraded to the best possible solution which must be no worse than the threshold marked in Column A.

HOW TO ACHIEVE THERMAL EFFICIENCY.

If a thermal element has not previously been part of the thermal envelope, or the dwelling was used for other purposes, then the wall may not already include insulation, in which case insulation over and above GTEC Thermal Boards may be needed. If a thermal element is only marginally worse than the threshold value (Column A) then a moderate level of GTEC Thermal Board may be required to achieve the improved values in Column B.

TABLE 3: UPGRADING RETAINED THERMAL ELEMENTS*

ELEMENTS	A	B
	THRESHOLD U-VALUE (W/m ² k)	IMPROVED U-VALUE (W/m ² k)
Walls - external or internal insulation	0.70	0.30
Pitched roof - insulation at ceiling level	0.35	0.16
Pitched roof - insulation between rafters	0.35	0.18
Flat roof or roof with integral insulation	0.35	0.18

U-VALUE - WHAT DOES IT MEAN?

Put simply, a U-value is the measurement of the rate of heat loss through a material. So in all aspects of home renovation you should strive for the lowest U-values possible because the lower the U-value, the less heat will be unnecessarily lost.

The calculation of U-values can be quite complex. It is measured as the amount of heat loss through a 1m² of material for every degree difference in temperature either side of the material. It is indicated in units of watts m² per degree Kelvin or W/m²k. Kelvin is used as the scale of temperature difference, but this is numerically equal to degrees celsius.

IT'S THIS SIMPLE

SO FOR EXAMPLE

- 1m² of a **GTEC Thermal Board 30mm** attached to a solid brick 9" (215mm) wall will transmit about 0.84 watts of energy for each degree difference either side of the board, or a **U-value of 0.84**.
- Using **GTEC Thermal K Board 30mm** will be considerably better with a **U-value of 0.64**, therefore only transmitting 0.64 watts of energy per m² in similar conditions.

* Table content from Approved Document L1B

THE TIMELINE BELOW DEMONSTRATES THE EVOLUTION OF DOMESTIC WALL MAKE-UP AND THE U-VALUES OF THE CONSTRUCTION TYPE IF UNCHANGED SINCE ORIGINAL BUILD.

Pre Victorian

Victorian

Edwardian

1970's

1980 + 90's

2000's



Solid Stone Masonry.
U-Value 2.4 if unchanged



Solid Brick.
U-Value 2.1 if unchanged



Brick with small cavity (25mm).
U-Value 1.6 if unchanged



Brick and block with cavity
and basic insulation.
U-Value 1.0 if unchanged



Brick and block with 50mm+ cavity
and medium levels of insulation.
U-Value 0.6 if unchanged



Brick and block with 100mm cavity and
high spec insulation or modern method of
construction. U-Value 0.35 if unchanged

The evolution of domestic wall make up in the UK & associated U-values

Types and values Using SAP 2009 RDSAP Appendix S and approx history of household construction.

WHICH GTEC THERMAL BOARD TO USE AND WHY.

Choosing the right board is crucial to any project and Siniat is ready to help you make the right choice.

Over history there have been significant developments in the way in which dwellings are constructed, from solid stone to the cavity wall constructions we have today which are significantly more thermally efficient.

When renovating a project it is important to know the construction type. The starting point to any GTEC Thermal Board choice is simply "what is your project and what is the wall construction?"

The timeline above shows a history of wall construction in the UK and is aimed to help you understand your U-value starting point for any GTEC Thermal Board choice.

You may have been given guidance from your architect as to the thickness of the thermal board you need, or a U-value you must meet,

but you may be unclear as to the specific thermal board required.

The Siniat Enquiryline is a recognised and valued service to all of our customers. They support customers with large commercial projects to one off domestic renovations. The team is here to help.

You can contact the **Siniat Enquiryline** team between **9am – 5pm Monday to Friday** on **01275 377789**. All you need to do is give them the answers to the questions opposite and they will help you choose the right GTEC Thermal Board.

Siniat offers a range of GTEC Thermal Boards and it is important that you make the right choice for your client or for yourself. Consider what will be the best outcome in the longer term i.e. cost savings and energy efficiency.

WHAT YOU NEED TO TELL US.

1. *What type of construction is the wall/roof of your project?
Or what age is your property?*
2. *For Walls/Roofs*
 - *What is the construction of the wall/roof from outside to in?*
 - *What insulation products are in the wall/roof?*
 - *Do you know the thermal values of these products?*
 - *What U-Value do you need to meet?*
3. *Site Address. (Needed for calculating the condensation risk)*

THE GTEC THERMAL BOARD RANGE

GTEC THERMAL EPS BOARD - LOW

9.5mm standard board bonded to **expanded polystyrene (EPS)**. Used mainly to provide basic improvements to thermal insulation where you need a simple thermal upgrade solution.

- Available in thicknesses 22 to 50mm.
- Provides up to 21 x thermal resistance of standard plasterboard.
- Prevents cold spots where surface condensation could form.



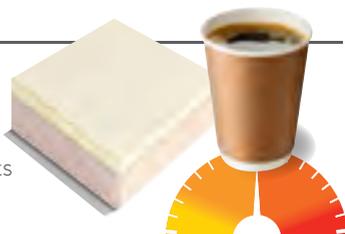
THERMAL EPS - LOW



GTEC THERMAL XP BOARD - MEDIUM

9.5mm plasterboard bonded to **extruded polystyrene (XPS)**. Used to provide medium improvements to thermal insulation.

- Available in thicknesses 27 to 55mm.
- Provides up to 29 x thermal resistance of standard plasterboard.
- Prevents cold spots where surface condensation could form.



THERMAL XP - MEDIUM



GTEC THERMAL PIR BOARD - HIGH

9.5mm plasterboard bonded to **polyisocyanurate foam (PIR)**. Used to provide high improvements to thermal insulation.

- Available in thicknesses 35 to 60mm.
- Provides up to 44 x thermal resistance of standard plasterboard.
- Prevents cold spots where surface condensation could form.
- A vapour barrier is provided as standard to control condensation within the wall.



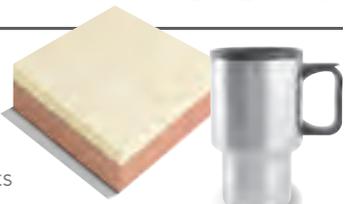
THERMAL PIR - HIGH



GTEC THERMAL K BOARD - HIGHEST

9.5mm standard plasterboard bonded to **phenolic foam**. This is the highest performing Siniat Thermal Board and will provide the greatest thermal insulation.

- Available in thicknesses 30 to 70mm.
- Ideal when space is crucial. Superior performance from a thinner board compared to XP and GTEC Standard Thermal Board.
- Provides up to 59 x thermal resistance of standard plasterboard.
- Prevents cold spots where surface condensation could form.
- A vapour barrier is provided as standard to control condensation within the wall.



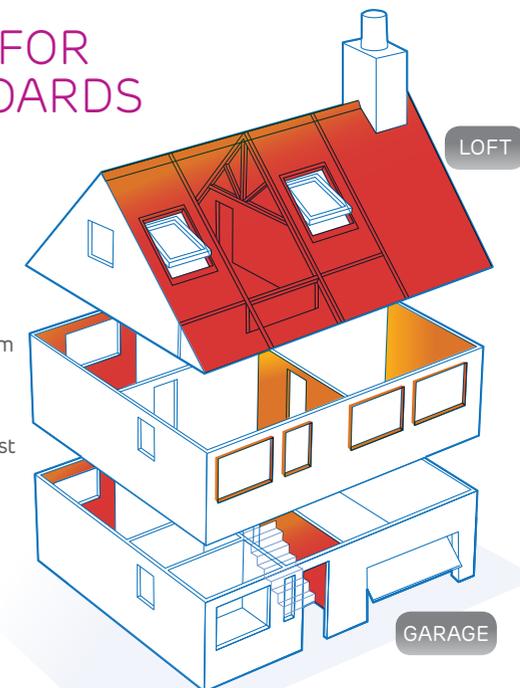
THERMAL K - HIGHEST



IDEAL LOCATIONS FOR GTEC THERMAL BOARDS

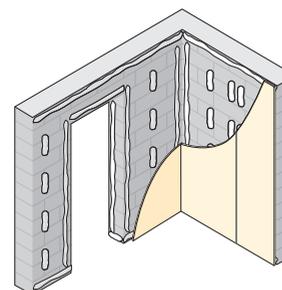
This diagram indicates where you are likely to use each type of board.

- Key:
- = Thermal EPS Thermal XP } Low to Medium
 - = Thermal PIR Thermal K } High to Highest



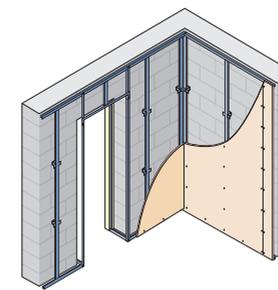
IDEAL GTEC LINING SYSTEMS FOR GTEC THERMAL BOARDS

GTEC DIRECT BOND



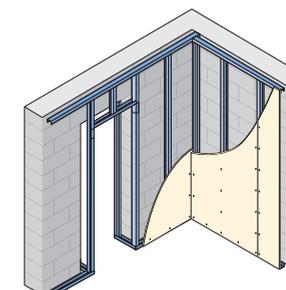
For drylining GTEC Thermal boards direct to masonry walls.

GTEC DRYLINER



For drylining uneven masonry backgrounds and for the concealment of services. For cavity widths between wall and plasterboard lining from 25mm to 130mm.

GTEC INDEPENDENT WALL LINING SYSTEM

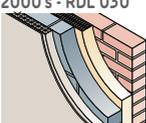
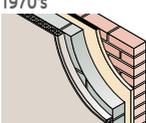
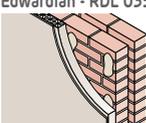
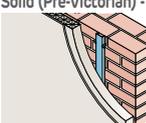
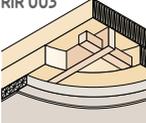
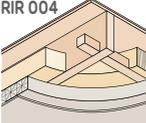


For drylining significantly out of plumb walls where GTEC Dryliner or GTEC Direct Bond are unsuitable. An example where you may use this system is for drylining walls of a barn conversion.

FOR YOUR DETAILED INSTALLATION INSTRUCTIONS CONTACT LITERATURELINE ON **01275 377582**.

GTEC THERMAL BOARD SELECTOR

Use the matrix to select the best GTEC Thermal Board for your project. Choose your project type, new extension or upgrade, select the construction type from the first column and then cross reference against the U-value requirement.

			NEW EXTENSION			UPGRADE TO EXISTING				
			U-VALUE REQUIRED PART L 2010	GOOD (U-Value)	BETTER (U-Value)	BEST (U-Value)	U-VALUE REQUIRED PART L 2010	GOOD (U-Value)	BETTER (U-Value)	BEST (U-Value)
     	CAVITY WALLS	2000's - RDL 030  <p>Brick skin: 103mm Full fill cavity: 75mm with glass wool insulation 100mm medium dense block (K=0.51) Linings: Siniat thermal laminate, direct bond.</p>	0.28	GTEC Thermal XP 55mm (0.25)	GTEC Thermal PIR 35mm (0.28) 50mm (0.23) 60mm (0.21)	GTEC Thermal K 40mm (0.25) 50mm (0.23) 60mm (0.20) 70mm (0.18)	0.30	GTEC Thermal XP 35mm (0.35) 55mm (0.25)	GTEC Thermal PIR 35mm (0.28) 50mm (0.23) 60mm (0.21)	GTEC Thermal K 30mm (0.29) 40mm (0.25) 50mm (0.23) 60mm (0.20) 70mm (0.18)
		1980's  <p>Brick skin: 100mm Partial fill cavity: 35mm glass fibre; 25mm cavity; 100mm medium density block work Linings: Siniat thermal laminate, direct bond.</p>	0.28	-	GTEC Thermal PIR 60mm (0.25)	GTEC Thermal K 50mm (0.28) 60mm (0.24) 70mm (0.21)	0.30 (0.55**)	GTEC Thermal XP 27mm (0.45) 35mm (0.35) 55mm (0.25)	GTEC Thermal PIR 35mm (0.36) 50mm (0.29) 60mm (0.25)	GTEC Thermal K 30mm (0.39) 40mm (0.32) 50mm (0.28) 60mm (0.24) 70mm (0.21)
		1970's  <p>Brick skin: 100mm; 15mm polystyrene; 25mm cavity; 100mm medium density block work. Linings: Siniat thermal laminate, direct bond.</p>	0.28	-	-	GTEC Thermal K 60mm (0.28) 70mm (0.25)	0.30 (0.55**)	GTEC Thermal XP 35mm (0.54) 55mm (0.40)	GTEC Thermal PIR 35mm (0.47) 50mm (0.35) 60mm (0.30)	GTEC Thermal K 30mm (0.52) 40mm (0.41) 50mm (0.34) 60mm (0.28) 70mm (0.25)
		Edwardian - RDL 035  <p>Skin: Brick skin 103mm Cavity: Clear cavity 50mm Inner: Brick inner leaf 103mm Linings: Direct bond Siniat thermal laminate.</p>	0.28	-	-	GTEC Thermal K 70mm (0.26)	0.30	-	-	GTEC Thermal K 60mm (0.30) 70mm (0.26)
		Victorian - RDS 007  <p>Block: Solid stone 300mm, Dryliner channels at 400mm centres Lining: Siniat thermal laminate.</p>	0.28	-	-	GTEC Thermal K 70mm (0.28)	0.30	-	-	GTEC Thermal K 70mm (0.28)
		Solid (Pre-Victorian) - RDS 009  <p>Block: Solid brick skin 215mm (9"), Dryliner channels at 400mm centres Lining: Siniat thermal laminate.</p>	0.28	-	-	GTEC Thermal K 70mm (0.27)	0.30	-	-	GTEC Thermal K 70mm (0.27)
  	PITCHED ROOF LOFT SPACE FLAT ROOF	RIR 002 <p>Rafters: 47 x 100mm at 600mm centres with noggings Insulation: 50mm Kingspan K7 Ceiling: Siniat Thermal K Board.</p>	0.18	-	-	GTEC Thermal K 70mm (0.17)	0.18	-	-	GTEC Thermal K 70mm (0.17)
		RIR 003 <p>Trusses: 38 x 100mm at 600mm centres with noggings Insulation: 100mm glass mineral wool quilt between joists, 100mm glass mineral wool quilt over joists density 10.5 - 16kg/m³ Ceiling: Siniat Thermal K Board.</p>	0.16	GTEC Thermal XP 55mm (0.15)	GTEC Thermal PIR 35mm (0.16) 50mm (0.15) 60mm (0.16)	GTEC Thermal K 40mm (0.16) 50mm (0.15) 60mm (0.13) 70mm (0.13)	0.16	GTEC Thermal XP 55mm (0.15)	GTEC Thermal PIR 35mm (0.16) 50mm (0.15) 60mm (0.16)	GTEC Thermal K 40mm (0.16) 50mm (0.15) 60mm (0.13) 70mm (0.13)
		RIR 004 <p>Joists: 47 x 100mm at 600mm centres with noggings Insulation: 100mm glass mineral wool quilt density 10.5kg/m³.</p>	0.18	-	-	GTEC Thermal K 70mm (0.17)	0.18	-	-	GTEC Thermal K 70mm (0.17)

THERMAL BOARD CHOICE IN PRACTICE...



Example A



Mr Jones is a builder renovating a 1920's property with an external wall construction of 9" solid brick. He has to upgrade a bedroom where two walls are the external walls of the house.

The client wants to improve the thermal efficiency slightly without losing too much internal space.

There are no Part L regulations to be met as the area to upgrade is less than 50% of the wall area. Therefore, Mr Jones can simply use **GTEC Thermal XP Board** which provides up to **29 x thermal resistance of standard board**.

However, by selecting a higher performing board such as **GTEC Thermal K Board**, the insulation efficiency of the plasterboard will provides up to **59 x thermal resistance of standard board**. So, by asking his customer to invest that little extra, the builder has ensured that they don't need to use as much energy to keep the room warm.



Example B



Mr Smith is a builder working on a new extension which has a brick skin with full cavity glass wool insulation 100mm medium dense block.

The Standard Assessment Procedure (SAP) calculation provided from an approved assessor states that he needs to meet a **U-value of 0.25** in order to meet the Building Regulations set out in Approved Document Part L1B.

However there has been no indication on the plans from the architect as to which type of board to use.

He can either use a **GTEC Thermal XP Board (55mm)** which will meet the requirements, or he can ask his customer to invest further and purchase a thinner board to meet the same performance with **GTEC Thermal K Board (40mm)**.

*Still Confused About Which
GTEC Thermal Board To Buy And Why?*
SPEAK TO SINIAT TECHNICAL ENQUIRYLINE

TECHNICAL ENQUIRYLINE

Giving you the right advice so you can choose the right GTEC Thermal Board for your job.

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