

# Guide to Insulated Drylining

# Thermal Liners

Home energy use is responsible for over a quarter of our carbon dioxide (CO<sub>2</sub>) emissions which contribute significantly to climate change. Insulating effectively is the single most important factor in improving the energy efficiency of our buildings.

Whether you are upgrading an existing property or building new, the addition of an insulated thermal lining to the inside of a wall, roof slope or ceiling will dramatically improve the energy efficiency standards in your home.

This guide explains how to achieve ultimate performance when using our Thermal Liners, giving recommended specifications and installation guidelines to installers, either professional or DIY.



---

## Why Insulate?

- ✓ Increased comfort for the the property's occupants
- ✓ Reduced energy costs and increased affordability through reduced energy use and lower energy bills
- ✓ Reduced CO<sub>2</sub> emissions, which benefits the environment

---

## Benefits of Thermal Liners

- ✓ Optimum performance from a thinner board
- ✓ Cost-effective
- ✓ External wall appearance maintained
- ✓ Easy to install
- ✓ Readily available from your local builders merchant



# UNILIN INSULATION

## Contents

<b>Fixing Methods Overview</b>	04
<b>Identifying your wall type</b>	06
<b>Adhesive Fix (Dot &amp; Dab)</b>	08
<b>Mechanical Fix 1</b> Insulated plasterboard on timber battens.	09
<b>Mechanical Fix 2</b> Insulated plasterboard on proprietary metal furring system.	10
<b>Mechanical Fix 3</b> Insulation directly on to wall, then service void between timber battens.	11
<b>Mechanical Fix 4</b> Insulated plasterboard fixed directly to wall.	12
<b>Thermal Liners</b>	14
<b>XT/TL DD</b>	16
<b>XT/TL-MF</b>	20
<b>SR/TBFL-MF</b>	26
<b>Pitched Roof &amp; Ceiling Application</b>	30

# Fixing methods for new and existing internal walls

Unilin Thermal Liners can be installed using mechanical fixing options or adhesive systems. Mechanical fixing options include fixing to timber battens, framing and metal furring systems. Adhesive fixing is done using proprietary systems and traditional dot & dab bonding.

The following pages expand on the fixing types for each product and the importance of identifying both the wall type and the condition of the wall to which the thermal liner will be fixed.

## Mechanically Fixed

In many instances, older walls are not suitable for dot & dab application because they have an uneven surface. In such situations, the application of Thermal Liners using a mechanically fixed system onto timber framing/battens or a metal furring system might be appropriate to provide a level surface. Unilin Thermal Liners can also be mechanically fixed directly onto an even wall.



## Direct Bonding-Dot & Dab

Unilin supply a range of Thermal Liners with tri-laminate paper facings specifically designed to accept adhesive type fixing systems such as dot & dab. Adhesive bonding of the Thermal Liners can be made to most masonry surfaces if the walls are plumb and in good condition.

Existing plastered walls that are in good condition will also accept adhesive dabs.

Any painted surface should be sanded back and treated with a PVA adhesive before applying adhesive dabs. Ribbons of adhesive should be placed around all wall edges and all openings and services on the wall to provide a fire stop and avoid air movement behind the thermal laminates.





# General Guidance

- Walls should be assessed for suitability for drylining – refer to BS5628:Part 3 2001.
- Ensure all walls are dry before fixing liners. If moisture ingress is a possibility, erect an independent internal wall.
- Fix the thermal liner board to the wall with a minimum of 2 fire-proof fixings.
- Timber fixing battens will be required in the insulation layer to carry heavy fixings e.g, radiators, kitchen units/sinks.
- Avoid running electrical cables within the insulation layer.
- Insulation at window & door reveals can be reduced to prevent thermal bridging & condensation.
- Ensure adequate ventilation in rooms where thermal liners are present.
- Correct insulation thickness and appropriate use of heating/ventilation will prevent surface condensation.

**Note:**

Older walls, depending on the build quality and the materials used, may lend themselves to different methods of fixing.

Note: When upgrading existing properties, a professional should be engaged to assess the property for appropriate insulation treatments and effective detailing. Walls should be dry and decoration stripped back to the wall substrate. Appropriate ventilation strategies must be considered as part of the overall energy upgrade. Guidance in PAS2035:2023 'Specification for the installation of energy efficiency measures (EEM) in existing buildings and BS8212 Code of practice for drylining and partitions should be consulted. NSAI S.R 54 Code of Practice should also be consulted.

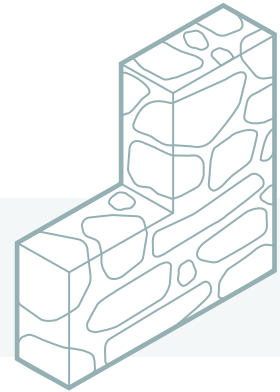
# Identifying your wall type

The type of wall, build quality and materials used in your refurbishment project may have a significant impact in determining which thermal liner and fixing method is most appropriate for your project.

For further information, please consult NSAI SR 54 2014 and speak to your refurbishment advisor.

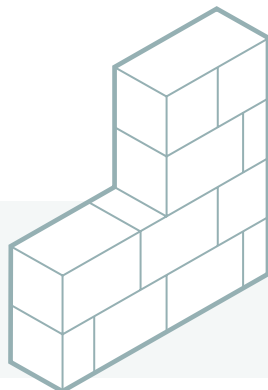
## Solid Stone

A solid stone wall is any wall comprised of stones, be that natural stone, cut stone, or reconstituted stone, with or without mortar.



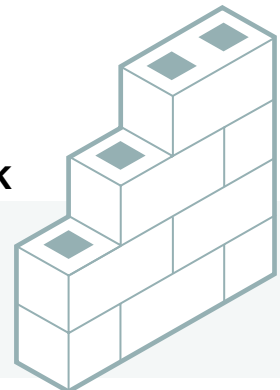
## Solid Brick

Typically in older houses, a solid brick wall is constructed in a single layer in one material.



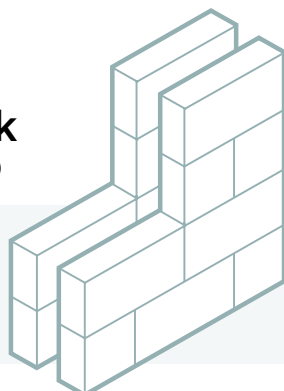
## Hollow Concrete Block

A block made of concrete which has hollow spaces between its walls. It is used to build different types of walls for different purposes like retaining walls, decorative walls, classic walls, etc.



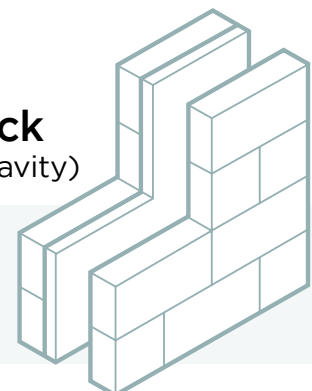
## Concrete Block (no cavity insulation)

A double layer of solid blocks.



## Concrete Block (Partial fill EPS in cavity)

A double layer of concrete block where the cavity between is filled with expanded polystyrene insulation.





Fixing Type	Fixing Method	Stone	Brick	Block	Plaster
<b>Adhesive Fix (Dot &amp; Dab)</b>	Insulated plasterboard adhesively fixed to wall - Dot and Dab.	X	✓	✓	✓
<b>Mechanical Fix 1</b>	Insulated plasterboard on timber battens.	✓	✓	✓	✓
<b>Mechanical Fix 2*</b>	Insulated plasterboard on proprietary metal furring system.	✓	✓	✓	✓
<b>Mechanical Fix 3</b>	Insulation directly on to wall, then service void between timber battens.	X	✓	✓	✓
<b>Mechanical Fix 4</b>	Insulated plasterboard fixed directly to wall.	X	✓	✓	✓

\*PIR Thermal Liner only

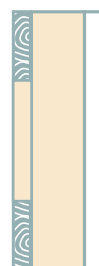
### Reference Guide:

Insulation Board		Plasterboard Laminate		Void Space		Dot & Dab		Timber Batten		Steel Section		Mechanical Fixing	
------------------	--	-----------------------	--	------------	--	-----------	--	---------------	--	---------------	--	-------------------	--

**Adhesive Fix (Dot & Dab)**  
Insulated plasterboard adhesively fixed to wall - Dot and Dab.



**Mechanical Fix 1**  
Insulated plasterboard on timber battens.



**Mechanical Fix 2**  
Insulated plasterboard on proprietary metal furring system.



**Mechanical Fix 3**  
Insulation directly on to wall, then service void between timber battens.



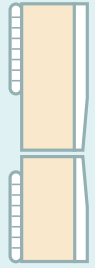
**Mechanical Fix 4**  
Insulated plasterboard fixed directly to wall.



For fitting advice visit  
[unilininsulation.ie/technical/technical-resources/videos](http://unilininsulation.ie/technical/technical-resources/videos)

**Watch our 'how to' videos** →





## Adhesive Fix (Dot & Dab)

Insulated plasterboard adhesively fixed to wall - Dot and Dab.



**01**

Ensure the wall is dry and free from any protrusions/wall paper etc.



**02**

Apply adhesive dabs to the wall in accordance with BS8212, ensuring a 50mm continuous ribbon of adhesive is created at the top and bottom of each board and around all openings. Follow adhesive manufacturer's guidelines.



**03**

Place Thermal Liner into position using lifting wedges on floor.

Tap board into position using a straight edge. Insulation should be cut back to accommodate an adjoining panel at external corners.



**04**

General recommendation is to apply vertical dabs at 300mm centres, 25mm in from the edge. Dabs should be 50-75mm wide and approximately 25mm deep to allow for tamping. Total contact with board area should be minimum 20%.

Maximum height installation for this system is 3m.



**05**

Align the board squarely on wall. Apply pressure to the board to level and embed it into the adhesive. Allow a 15 mm clearance gap at the base of the wall which should be filled with a foam filler or equivalent.

Insulation should be cut back to accommodate an adjoining panel at external corners. Joints should be tightly butted.



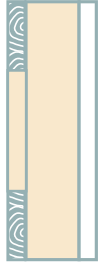
**06**

When the adhesive has dried, 3 mechanical fixings (thermally broken) should be fixed through the centre of the board.

Seal and tape the joints of the plasterboard to ensure a continuous vapour control layer is created.

Plaster skim to finish.





# Mechanical Fix 1

Insulated plasterboard on timber battens.



**01**

Ensure wall is dry, clean and free of protrusions.



**02**

Place treated timber battens around wall edges, openings and service penetrations.

Fix battens to wall at min 600mm centres, use fillet pieces to ensure level surface.



**03**

Place Unilin Thermal Liner in position using lifting wedges on floor.

Insulation should be cut back to accommodate an adjoining panel at external corners.



**04**

Screws should be fixed to the timber batten at 150mm centres, at least 12mm in from the board edge.

The fixings should penetrate at least 25mm into the batten.



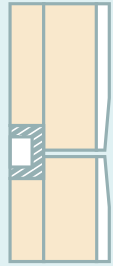
**05**

Fit Thermal Liner on to timber battens. The insulation thickness can be reduced at reveals.



**06**

Seal any gaps with sealant, (floor detail) and fill and tape joints in accordance with good drylining practice.



## Mechanical Fix 2

Insulated plasterboard on proprietary metal furring system.



**01**

Ensure wall is dry, clean and free of protrusions.



**02**

Fix metal frame system to the wall in accordance with the manufacturer's instructions. Sections should be placed around all wall edges and around openings and services.



**03**

Fix the metal frame system at a maximum of 600mm centres. Ensure framing system is wide enough to offer 20mm support to all four edges of the plasterboard. Pack battens, if necessary, to level the wall. Adjust frame as per manufacturer's instructions to level the wall if necessary. Extra studs may be required when the XT/TL-MF is unsupported by the battens/stud.



**04**

Place the thermal liner in position using lifting wedges on floor. Insulation should be cut back to accommodate an adjoining panel at external corners.



**05**

Fix the Thermal Liner to the frame at 300mm centres using appropriate fixings e.g. drywall screws, at least 12mm in from the board edge. The fixings should penetrate at least 25mm into the battens/studs.

For specific guidance contact fixing manufacturer.



**06**

Seal and tape the joints of the plasterboard to ensure a continuous vapour control layer is created. Fill any gaps with foam filler or equivalent.

Plaster skim to finish.

**Note:** Insulation should be cut back to accommodate an adjoining panel at corners.



## Mechanical Fix 3

Insulation directly on to wall, then service void between timber battens.



**01**

Ensure wall is dry, clean and free of protrusions.



**02**

Temporarily fix Unilin insulation directly to wall, ensuring layer is continuous.

Tape joins with aluminium foil tape or apply separate vapour control layer.



**03**

Place treated timber battens around wall edges, openings and service penetrations. Battens should allow for min. 20mm support of Plasterboard on all edges.



**04**

Screw fix timber battens at max. 600mm centres to wall through Unilin layer. The insulation thickness can be reduced at reveals.



**05**

Plasterboard should be fixed with drylining screws to the timber batten at 150mm centres, at least 12mm in from the board edge. The fixings should penetrate at least 25mm into the batten.



**06**

Seal any gaps with sealant, (floor detail) and fill and tape joints in accordance with good drylining practice.

Fix skirting board.



## Mechanical Fix 4

Insulated plasterboard fixed directly to wall.



**01**

Ensure wall is dry, clean and free of protrusions.



**02**

Place the Thermal Liner in position using lifting wedges on floor, ensuring boards are square to the wall edges.



**03**

Insulation should be cut back to accommodate an adjoining panel at external corners. Insulation thickness can be reduced at reveals.



**04**

The Thermal Liner should be fixed directly to the wall with suitable mechanical fixings, in accordance with manufacturers recommended quantities and fixing patterns.

Fixings should not lap of the edge of the boards. At least two of the fixings should be of a fire proof type. The fixings should penetrate at least 25mm into the wall.



**05**

Seal any gaps with sealant, (floor detail) and fill and tape joints in accordance with good drylining practice.

Fix skirting board.

# HANDLING, CUTTING & STORAGE

Unilin insulation should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure. Care should be taken to protect the insulation in storage and during the build process.

The insulation boards can be readily cut using a sharp knife or fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for within the ACDs. Appropriate PPE should be worn when handling insulation. Please refer to Health & Safety data sheets on our website.

The boards are wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack.

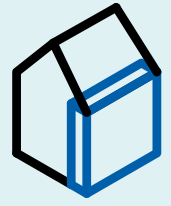
## **Durability**

Unilin Insulation products are stable, rot proof, provide no food value to vermin and will remain effective for the lifetime of the building, depending on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil. When contact is made, clean materials in a safe manner before installation.





# Thermal Liners



When upgrading an existing property, the addition of an insulated thermal lining to the inside of a wall, roof slope or ceiling will dramatically improve your home's energy efficiency.



## Internal Wall Insulation Solutions

Find out more at:  
[unilininsulation.ie/betterhomes](http://unilininsulation.ie/betterhomes)

### XT/TL DD

#### Drylining Walls Fixed with Adhesive Dabs

Thin-R Thermal Liner (Dot & Dab) is a composite insulated panel of Unilin PIR insulation core with a composite kraft facing bonded to 12.5mm tapered edge plasterboard for internal applications, fixed with an adhesive bonding.

##### BENEFITS

- ✓ Insulation & drylining in one application
- ✓ Suitable for a variety of wall types

##### MOSTLY USED WHEN

- ✓ Walls are plumb, in good condition and when interior space isn't restricted



### XT/TL-MF

#### Drylining Walls: Mechanically Fixed

Thin-R Thermal Liner (Mechanically Fixed) is a composite insulated panel of Unilin PIR insulation core with a composite foil facing bonded to 12.5mm tapered edge plasterboard for internal walls, sloped roofs and ceilings. It is only suitable for mechanically fixed applications.

##### BENEFITS

- ✓ Insulation & drylining in one application
- ✓ Suitable for a variety of wall types

##### MOSTLY USED WHEN

- ✓ On older walls and uneven surfaces and when interior space isn't restricted



### SR/TBFL-MF

#### Drylining Walls: Mechanically Fixed

Safe-R Fireline Thermal Laminate is a composite insulated panel comprising of a rigid Phenolic core and 15mm Fireline plasterboard achieving a Euroclass B-s1 d0 reaction to fire classification for internal applications. The superior thermal performance provides excellent U-Values with minimal intrusion into valuable living space.

##### BENEFITS

- ✓ Reduces intrusion into living area
- ✓ Easy installation
- ✓ Reduces the risk of condensation

##### MOSTLY USED WHEN

- ✓ On older walls and uneven surfaces and when interior space is restricted



**THIN-R** PIR  
INSULATION

# Drylining Walls Fixed with Adhesive Dabs

## XT/TL DD

**Thin-R Thermal Liner (Dot & Dab)** is a composite insulated panel of Unilin PIR insulation core with a composite kraft facing bonded to 12.5mm tapered edge plasterboard for internal applications, fixed with proprietary adhesive bonding.

The composite kraft facing on both sides incorporates an integral vapour control layer, which helps to reduce the risk of condensation. Thin-R Thermal Liners are designed to provide high levels of thermal insulation and drylining in one operation, providing the solution of choice in new build and renovation. Whether building new or upgrading, due consideration towards the energy efficiency of your home can have many benefits, including reduced energy costs and improved living conditions.

### Benefits

- Insulation & drylining in one application
- Provides effective vapour control layer
- Reduced insulation thickness
- Suitable for a variety of wall types
- Cost effective solution in refurbishment and new build



### Specification Clause

The insulated dry lining wall insulation shall be Thin-R XT/TL manufactured to EN 13950 by Unilin Insulation, comprising of a rigid Polyisocyanurate (PIR) core with kraft paper facings. The Thin-R XT/TL \_\_mm with an Agrément declared Lambda value of 0.022 W/mK (PIR only) bonded to 12.5mm plasterboard, achieving a U-Value of \_\_W/m²K for the wall element. The insulated drylining plasterboard XT/TL shall be fixed with plaster dabs adhesive or proprietary system in accordance with instructions issued by Unilin Insulation.

An Environmental Product Declaration (EPD), certified by IGBC is available for the product insulation. Please contact technical support for further details.



Refer to NBS clause K10 205, K10 15, K10 245, K10 35, K10 155, K45 45. Uniclass 25 71 63 66.



### Thermal Resistances

Thickness PIR (mm)	Thickness Plasterboard (mm)	Overall Thickness (mm)	R-Value (m²K/W)
25	12.5	37.5	1.20
38	12.5	50.5	1.75
50	12.5	62.5	2.30
60	12.5	72.5	2.75

### Resistance 'R' Values

The resistance value of any thickness of material can be ascertained by dividing the thickness (in metres) by its Lambda value, for example: Lambda 0.022 W/mK and PIR thickness 50mm -> 0.050 / 0.022 -> R-Value = 2.27. This is then added to the 12.5mm plasterboard resistance (0.066) to calculate the overall resistance of the composite board (2.27 + 0.066) = 2.336. In accordance with EN 13950, R-Values should be rounded down to the nearest 0.05 (m²K/W).

## XT/TL DD

### 1. Integral vapour control layer

The composite kraft facing on this board provides a gas and vapour tight barrier, reducing the condensation risk. A continuous vapour control layer is created when the boards' joints are sealed and taped in accordance with drylining good practice.



### Fire Stops

An important factor when drylining a wall is to provide fire stops along the top and bottom of each board and around all openings (doors, windows, etc.). These are provided by the continuous ribbons of adhesive and prevent fire penetrating behind the insulation layer. These continuous ribbons of adhesive also help to prevent thermal looping, leading to an overall improved U-Value for the wall element.

## XT/TL

<b>Length (mm)</b>	2400
	2438 (ROI only)
<b>Width (mm)</b>	1200
<b>Thickness including plasterboard (mm)</b>	37.5, 50.5, 62.5, 72.5, 82.5, 92.5

Other thicknesses may be available depending on minimum order quantity and lead time.

### Property & Units

<b>Thermal Conductivity</b>	0.022 (W/mK) (PIR only)
<b>Reaction to Fire</b>	Euroclass B s1 d0

Unilin Insulation CE Declaration of Performance (DoP) for this product is available for download from our website.

# INSTALLATION GUIDELINES

## XT/TL DD

1. Ensure the wall is dry and free from any protrusions/wall paper etc.
2. Mark the position of the Thermal Liner on the wall. Setting out and planning board positioning is essential.
3. Apply adhesive dabs to the wall in accordance with BS8212, ensuring a 50mm continuous ribbon of adhesive is created at the top and bottom of each board and around all openings. Follow adhesive manufacturer's guidelines. General recommendation is to apply vertical dabs at 300mm centres, 25mm in from the edge. Dabs should be 50-75mm wide and approximately 25mm deep to allow for tamping. Total contact with board area should be minimum 20%. Maximum height installation for this system is 3m.



4. Lift the Thermal Liner into position using wedges on the floor.
5. Align the board squarely on wall. Apply pressure to the board to level and embed it into the adhesive. Allow a 15 mm clearance gap at the base of the wall which should be filled with a foam filler or equivalent. Insulation should be cut back to accommodate an adjoining panel at external corners. Joints should be tightly butted.
6. When the adhesive has dried, 2 mechanical fixings (thermally broken) should be fixed through the centre of the board.



7. Seal and tape the joints of the plasterboard to ensure a continuous vapour control layer is created.
8. Plaster skim to finish.

### Note

When upgrading existing properties, a professional should be engaged to assess the property for appropriate insulation treatments and effective detailing. Walls should be dry and decoration stripped back to the wall substrate. Appropriate ventilation strategies must be considered as part of the overall energy upgrade.

Guidance in PAS2030:2023 'Specification for the installation of energy efficiency measures (EEM) in existing buildings and BS8212 Code of practice for drylining and partitions should be consulted. NSAI S.R 54 Code of Practice should also be consulted.



# Typical U-Values



## XT/TL DD

U-Value calculations to EN ISO:6946

**XT/TL** - Dot & Dab

Thickness (mm)

Wall Type		38mm*	50mm*	60mm*	70mm*	80mm*
	Brick 225mm	-	-	-	0.26	0.23
	Hollow Block	-	-	-	0.26	0.24
	Cavity wall unfilled	-	-	-	0.25	0.23
	Cavity wall 40mm EPS	-	0.25	0.22	0.20	0.18
	Cavity wall 60mm EPS	0.26	0.23	0.21	0.19	0.17

**THIN-R** PIR INSULATION

# Drylining Walls: Mechanically Fixed

## XT/TL-MF

### Thin-R Thermal Liner (Mechanically Fixed)

is a composite insulated panel of Unilin PIR insulation core with a composite foil facing bonded to 12.5mm tapered edge plasterboard for internal walls, sloped roofs and ceilings. It is only suitable for mechanically fixed applications.

The composite foil facing on both sides of this board incorporates an integral vapour control layer, which helps to reduce the risk of condensation. This Mechanically fixed Thermal Liner is designed to provide high levels of thermal insulation and drylining in one operation, providing the solution of choice in new build and renovation.

### Benefits

- Insulation & drylining in one application
- Provides continuous vapour control layer
- Reduced insulation thickness
- Suitable for a variety of wall types
- Cost effective solution in refurbishment and new build

### Specification Clause

The insulated dry lining wall insulation shall be Thin-R XT/TL (MF) manufactured to EN 13950 by Unilin Insulation, comprising of a rigid Polyisocyanurate (PIR) core between Composite foil facings. The Thin-R XT/TL-MF \_\_\_mm with an Agrément declared Lambda value of 0.022 W/mK (PIR only) bonded to 12.5mm plasterboard, achieving a U-Value of \_\_\_W/m<sup>2</sup>K for the wall element. The insulated drylining plasterboard XT/TL-MF shall be mechanically fixed to battens, or proprietary system in accordance with instructions issued by Unilin Insulation.

An Environmental Product Declaration (EPD), certified by IGBC is available for the product insulation. Please contact technical support for further details.



Refer to NBS clause K10 205, K10 15, K10 25, K10 35, K10 155. Uniclass 25 71 63 66.



### Thermal Resistances

Thickness PIR (mm)	Thickness Plasterboard (mm)	Overall Thickness (mm)	R-Value (m <sup>2</sup> K/W)
25	12.5	37.5	1.20
40	12.5	52.5	1.85
50	12.5	62.5	2.30
60	12.5	72.5	2.75
80	12.5	92.5	3.70
100	12.5	112.5	4.60

### Resistance 'R' Values

The resistance value of any thickness of material can be ascertained by dividing the thickness (in metres) by its Lambda value, for example: Lambda 0.022 W/mK and PIR thickness 50mm -> 0.050/ 0.022 -> R-Value = 2.27. This is then added to the 12.5mm plasterboard resistance (0.066) to calculate the overall resistance of the composite board (2.27 + 0.066 ) = 2.336. In accordance with EN 13950, R-Values should be rounded down to the nearest 0.05 (m<sup>2</sup>K/W).



## XT/TL-MF

### 1. Integral vapour control layer

The composite foil facing on this board provides a gas and vapour tight barrier, reducing the condensation risk. A continuous vapour control layer is created when the boards' joints are sealed and taped in accordance with drylining good practice.



### 2. Fire Stops

An important factor when drylining a wall is to provide fire stops along the top and bottom of each board and around all openings (doors, windows, etc.). These are provided by the battens/studs and prevent fire penetrating behind the insulation layer. This also helps to prevent thermal looping, leading to an overall improved U-Value for the wall element.

### 3. Service Void

The void created between the battens/studs can be used for accommodating services.

### Note: Improved Overall U-Value

Thanks to its low emissivity foil facings this board, facing into an unventilated air void between battens/studs, will improve the U-Value of the wall.

## XT/TL-MF

Length (mm)	2400
Width (mm)	1200
Thickness including plasterboard (mm)	37.5, 42.5, 52.5, 62.5, 72.5, 82.5, 92.5, 102.5, 112.5

Other thicknesses may be available depending on minimum order quantity and lead time.

## Property & Units

Thermal Conductivity	0.022 (W/mK) (PIR only)
Reaction to Fire	Euroclass B s1 d0

Unilin Insulation CE Declaration of Performance (DoP) for this product is available for download from our website.

# INSTALLATION GUIDELINES

## XT/TL-MF

1. Ensure the wall is dry, clean and free of protrusions. Any existing wallpaper should be removed.
2. Fix metal frame system/timber battens to the wall in accordance with the manufacturer's instructions. Sections should be placed around all wall edges and around openings and services.



3. Fix the metal frame system/vertical timber battens at a maximum of 600mm centres (incorporating a vertical DPC behind timber battens). Ensure framing system/battens are wide enough to offer 20mm support to all four edges of the plasterboard. Pack battens, if necessary, to level the wall. Extra noggins may be required when the XT/TL-MF is unsupported by the battens/studs.



4. Lift the insulation board into position using wedges on the floor. Insulation should be cut back to accommodate an adjoining panel at external corners. Joints should be tightly butted.

5. Fix the Thermal Liner to the frame at 300mm centres using appropriate fixings e.g. drywall screws, at least 12mm in from the board edge. The fixings should penetrate at least 25mm into the battens/studs. Fixings should be thermally broken where possible. For specific guidance contact fixing manufacturer.



6. Seal and tape the joints of the plasterboard to ensure a continuous vapour control layer is created. Fill any gaps with foam filler or equivalent.



7. Plaster skim to finish.

### Note

When upgrading existing properties, a professional should be engaged to assess the property for appropriate insulation treatments and effective detailing. Walls should be dry and decoration stripped back to the wall substrate. Appropriate ventilation strategies must be considered as part of the overall energy upgrade.

Guidance in PAS2030:2023 'Specification for the installation of energy efficiency measures (EEM) in existing buildings and BS8212 Code of practice for drylining and partitions should be consulted. NSAI S.R 54 Code of Practice should also be consulted.



**UNILIN**  
INSULATION

# RENOVATE / INSULATE

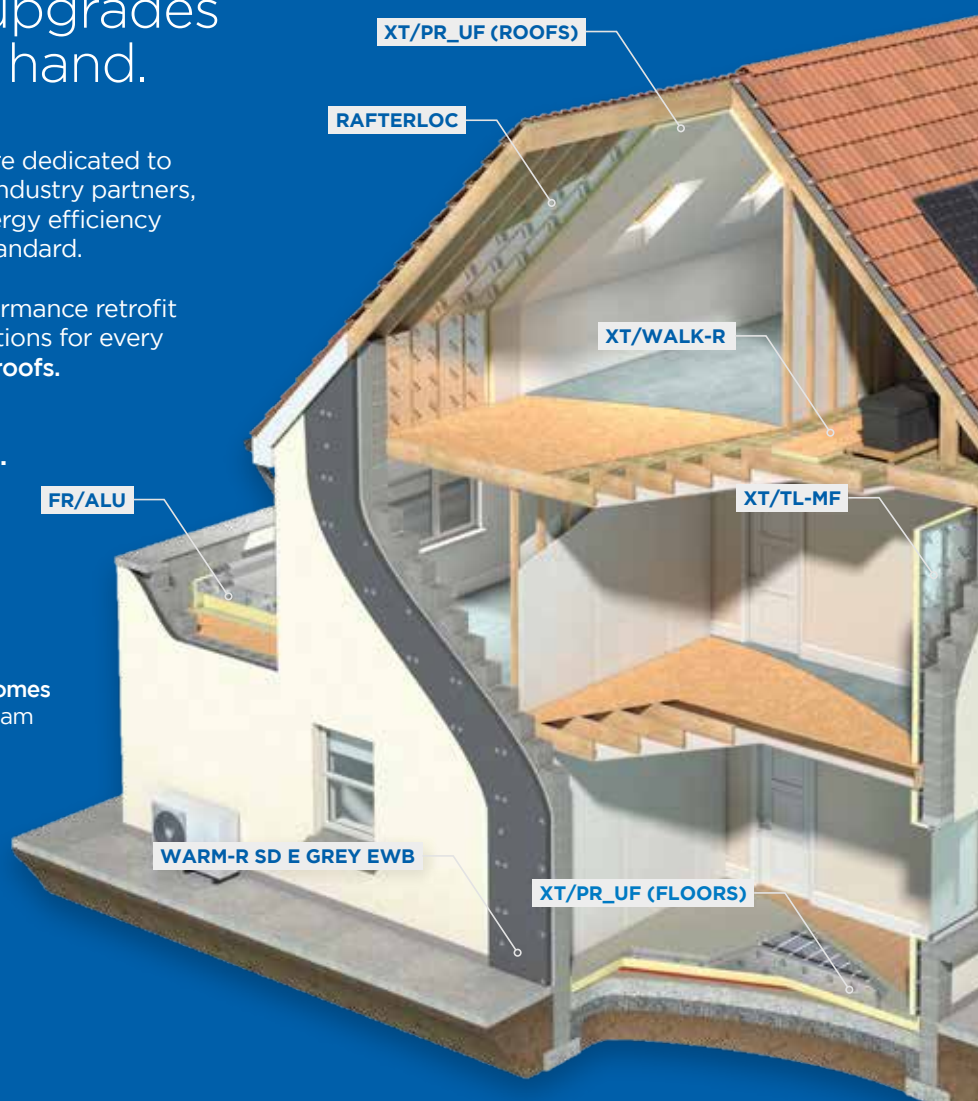
Renovation and  
Insulation upgrades  
go hand in hand.

At Unilin Insulation, we're dedicated to working alongside our industry partners, helping to bring the energy efficiency of older homes up to standard.

Our range of high-performance retrofit insulation provides solutions for every area - walls, floors and roofs.

**For warmer, more  
energy-efficient homes.**

For more information visit  
[unilininsulation.ie/betterhomes](https://unilininsulation.ie/betterhomes)  
Or contact our technical team  
on 046 906 6050





# Typical U-Values



## XT/TL-MF

### Mechanical Fix 1

Insulated plasterboard on timber battens.

U-Value calculations to EN ISO:6946

**XT/TL-MF** Drylined

Thickness (mm)

Wall Type	25mm*	30mm*	40mm*	50mm*	60mm*	70mm*	80mm*	90mm*
Brick 225mm	-	-	-	-	0.26	0.24	0.21	0.19
Stone 600mm	-	-	-	-	0.26	0.23	0.21	0.19
Hollow Block	-	-	-	-	0.27	0.24	0.22	0.20
Cavity wall unfilled	-	-	-	-	0.26	0.23	0.21	0.19
Cavity wall 40mm EPS	-	-	0.25	0.22	0.20	0.19	0.17	0.16
Cavity wall 60mm EPS	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

\*Insulation thickness only

### Mechanical Fix 2

Insulated plasterboard on proprietary metal furring system.

U-Value calculations to EN ISO:6946

**XT/TL-MF** Drylined

Thickness (mm)

Wall Type	25mm*	30mm*	40mm*	50mm*	60mm*	70mm*	80mm*	90mm*
Brick 225mm	-	-	-	-	0.27	0.24	0.22	0.20
Stone 600mm	-	-	-	-	0.27	0.24	0.22	0.20
Hollow Block	-	-	-	-	-	0.25	0.22	0.20
Cavity wall unfilled	-	-	-	-	0.27	0.24	0.22	0.20
Cavity wall 40mm EPS	-	-	0.26	0.23	0.21	0.19	0.18	0.16
Cavity wall 60mm EPS	0.27	0.25	0.23	0.21	0.19	0.17	0.16	0.15

## XT/TF

### Mechanical Fix 3

Insulation directly on to wall, then service void between timber battens.

U-Value calculations to EN ISO:6946

#### Thin-R XT/TF

Thickness (mm)

Wall Type	25mm	30mm	40mm	50mm	60mm	70mm	80mm	90mm
Brick 225mm	-	-	-	-	0.26	0.24	0.21	0.19
Stone 600mm	-	-	-	-	0.26	0.23	0.21	0.19
Hollow Block	-	-	-	-	0.27	0.24	0.22	0.20
Cavity wall unfilled	-	-	-	-	0.26	0.23	0.21	0.19
Cavity wall 40mm EPS	-	-	0.25	0.22	0.20	0.19	0.17	0.16
Cavity wall 60mm EPS	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Joints taped on insulation using aluminium foil tape

### Mechanical Fix 4

Insulated plasterboard fixed directly to wall.

U-Value calculations to EN ISO:6946

#### XT/TL-MF Drylined

Thickness (mm)

Wall Type	40mm*	50mm*	60mm*	70mm*	80mm*	90mm*
Brick 225mm	-	-	-	0.27	0.24	0.22
Stone 600mm	-	-	-	0.27	0.24	0.21
Hollow Block	-	-	-	-	0.24	0.22
Cavity wall unfilled	-	-	-	0.26	0.24	0.21
Cavity wall 40mm EPS	-	0.25	0.23	0.21	0.19	0.17
Cavity wall 60mm EPS	0.26	0.23	0.21	0.19	0.18	0.17

\*Insulation thickness only

**SAFE-R** PHENOLIC  
INSULATION

# Fireline Thermal Laminate

## SR/TBFL-MF

Safe-R Fireline Thermal Laminate is a composite insulated panel comprising of a rigid Phenolic core and 15mm Fireline plasterboard achieving a Euroclass B-s1 d0 reaction to fire classification for internal applications. The superior thermal performance provides excellent U-Values with minimal intrusion into valuable living space.

Safe-R Fireline Thermal Laminate achieved a REI 45 fire resistance in a system for ceiling and roof applications in accordance with EN 1365-2.

Safe-R Fireline Thermal Laminate is designed to provide high levels of thermal insulation and drylining in one operation, with the added assurance of high fire performance combined with excellent thermal values, making it the energy upgrade insulation solution of choice for new build and renovation projects.

### Benefits

- Superior thermal performance of 0.020 - 0.021 W/mK
- Reaction to fire - B-s1, d0
- Space saving - high performance to thickness ratio



### Specification Clause

The insulated drylining wall insulation shall be Unilin Insulation Safe-R SR/TB-FL Fireline manufactured to EN 13950 by Unilin Insulation, comprising of a rigid Phenolic core between composite foil facings and 15mm Fireline plasterboard achieving a Euroclass B-s1 d0 reaction to fire. The Unilin Insulation Safe-R SR/TB Fireline \_\_ \_\_mm with DOP declared Lambda value as low as 0.020 W/mK (Phenolic only), bonded to a 15mm Fireline plasterboard achieving a U-Value of \_\_ \_\_W/m²K. To be installed in accordance with instructions issued by Unilin Insulation.

Refer to NBS clause K10 20S5, K10 15, K10 245, K10 25. Uniclass Pr 25 71 63 59.

NBS Plus

### Thermal Resistances

Thickness Phenolic (mm)	Thickness Plasterboard (mm)	Overall Thickness (mm)	Overall R-Value (m²K/W)
50	15	65	2.40
60	15	75	2.90
70	15	85	3.35
80	15	95	3.85
100	15	115	5.05

### Resistance 'R' Values

The resistance value of any thickness of material can be ascertained by dividing the thickness (in metres) by its Lambda value, for example: Lambda 0.021 W/mK and Phenolic thickness 50mm ->  $0.050 / 0.021 \rightarrow R\text{-Value} = 2.380$ . This is then added to the 15mm plasterboard resistance (0.06) to calculate the overall resistance of the composite board ( $2.380 + 0.06$ ) = 2.44. In accordance with EN 13950, R-Values should be rounded down to the nearest 0.05 (m²K/W).



WALLS

# THERMAL BRIDGING

## SR/TBFL-MF

**A major factor in the performance of the building fabric is not simply the amount of insulation you install, but how it interconnects with other components and the other insulated elements within the design. It has been estimated that up to 30% of the heat loss in a well-insulated building is through these 'Non Repeating Thermal Bridges'.**

Guidance for the list of junctions to be used in an energy assessment are taken from appendix D in Part L. For each of these junctions, appropriate detailing can be satisfied by following details included in the Acceptable Construction Details (ACDs).

Good U-Values in these elements coupled with good detailing and decent air tightness ensure that, no matter where that energy comes from, conventional or low or zero carbon technologies, the heat loss from the building is minimised. However, care should be taken in design and construction to ensure that fuel conservation measures (e.g. additional insulation, air tightness) do not increase the risk of rain penetration, condensation, mould growth or other indoor air quality problems.

### Thermal Bridging and Dormer Roofs

Dormer roofs contain many junctions between ceiling, stud walls, sloped rafters and ridge. These junctions are difficult to detail for insulation continuity and air tightness sealing. Following the line of the rafters and insulating as a Sarking, reduces these junctions significantly and allows for better detailing.

### Thermal Bridging and retrofit

TGD L refers to NSAI SR 54:2014 Code of Practice for the Energy Efficient Retrofit of Dwellings as a source of technical guidance about the energy efficient retrofit of building fabric and services and the application of retrofit measures on a whole-dwelling basis.

### Safe-R Fireline Thermal Laminate for Pitched Roofs

Safe-R Fireline Thermal Laminate on sloped roofs (ventilated or hybrid) provides the most efficient U-Values with minimal intrusion into valuable living space and the assurance of a 45 REI fire classification.

In a conventional ventilated roof a 50mm clear ventilation gap should be maintained between the insulation and the roofing felt. In certain instances where a breather membrane is used, the ventilation gap may be reduced

or dispensed with, check with membrane manufacturer. Refer to manufacturer's guidelines.

### Ceilings

In a ceiling, typically fibre glass is placed between and over the joists – this hides the top of the joist and may lead to health and safety concerns when the roof space is being accessed. The thermal bridge which occurs through the joists can be addressed by placing a layer of Safe-R Fireline Thermal Laminate to the underside. This allows for the roof space to be accessed in a safe manner leaving the top of the joists exposed, which allows the roof space to be used for storage. Alternatively, a layer of insulation – covered with OSB board – can also be placed over the joists. Unilin Walk-R offers a ready made solution for this application.

### Application: Sloped Roof

1. Fix positioning battens to inner face of rafters, flush with the edge of the timber.
2. Allow for ventilation gaps, normally 50mm (may be reduced depending on breather membrane certification).
3. Cut the SR/PR boards with fine toothed saw to fit tightly between rafters, flush with the bottom of the rafter. Allow slight oversize of cut to achieve 'friction fit' and seal any gaps with expanding foam.
4. Any airtight membrane or vapour control layer can be placed to the underside of the rafters in accordance with the BRE Paper BR262: Condensation avoiding the risks.
5. The additional layer of Safe-R Fireline Thermal Laminate is affixed to the rafters using drylining screws. Where joints between sheets of Safe-R Fireline Thermal Laminate are unsupported by the rafters, timber noggins should be installed. Seal and tape the joints of the plasterboard or alternatively follow plasterboard manufacturer installations guidance.

### Hybrid Roof

Follow the same procedure as a ventilated roof except a breather membrane is used above the rafter allowing the 50mm ventilation space to be dispensed with. Typically, a 25mm unventilated void should be maintained; Agrément certification covering the membrane should be consulted.

\*Safe-R Fireline Thermal Laminate was tested to EN1365-2: 2014 to achieve a 45 minute fire rating with the following construction. SR/PR 100mm was fitted between the joists with Pur Pro TEC7 applied between the edge of the insulation and the joists. The 65mm Safe-R Fireline Thermal Laminate was fixed to the joists by countersunk screws (Ø 5 x 120mm) spaced evenly at 400mm centres. Scrim tape and filler were applied at board joints. Intusil Firetherm sealant was applied to the exposed edge of the roof and wall where gaps were present. A gypsum-based finish plaster was applied.

# INSTALLATION GUIDELINES

## SR/TBFL-MF

### Safe-R Fireline Thermal Laminate for internally insulated walls

Whether building new or upgrading an existing property, the Safe-R Fireline Thermal Laminate insulation provides the most effective solution that saves space.

1. Ensure the wall is dry, clean and free of protrusions. Any existing wallpaper should be removed.
2. Fix metal frame system/timber battens to the wall in accordance with the manufacturer's instructions. Sections should be placed around all wall edges and around openings and services.



3. Fix the metal frame system/vertical timber battens at a maximum of 600mm centres (incorporating a vertical DPC behind timber battens). Ensure framing system/battens are wide enough to offer 20mm support to all four edges of the plasterboard. Pack battens, if necessary, to level the wall. Extra nogginns may be required when the Safe-R Fireline Thermal Laminate is unsupported by the battens.
4. Lift the Safe-R Fireline Thermal Laminate into position using wedges on the floor. Insulation should be cut back to accommodate an adjoining panel at external corners. Joints should be tightly butted.
5. Fix the Safe-R Fireline Thermal Laminate to the frame at 300mm centres using appropriate fixings e.g. drywall screws, at least 12mm in from the board edge. The fixings should penetrate at least 25mm into the timber batten.

Fixings should be thermally broken where possible or alternatively follow plasterboard manufacturer installations guidance.

6. Seal and tape the joints of the Safe-R Fireline Thermal Laminate to ensure a continuous vapour control layer is created. Fill any gaps with foam filler or equivalent.



7. Plaster skim to finish.

#### Note on other variations

When upgrading existing properties, a professional should be engaged to assess the property for appropriate insulation treatments and effective detailing. Walls should be dry and decoration stripped back to the wall substrate. Appropriate ventilation strategies must be considered as part of the overall energy upgrade.

Guidance in PAS2030:2023 'Specification for the installation of energy efficiency measures (EEM) in existing buildings' and BS8212 Code of practice for drylining and partitions should be consulted. NSAI S.R 54 Code of Practice should also be consulted.



# Typical U-Values

## SR/TBFL-MF

### Mechanical Fix 1

Insulated plasterboard on timber battens.

U-Value calculations to EN ISO:6946

#### SR/TBFL-MF

Thickness (mm)

Wall Type	50mm*	60mm*	70mm*	80mm*	90mm*	100mm*
Brick 225mm	-	0.26	0.23	0.21	0.19	0.16
Stone 600mm	-	0.25	0.22	0.20	0.18	0.16
Hollow Block	-	0.26	0.23	0.21	0.19	0.17
Cavity wall unfilled	-	0.25	0.22	0.20	0.18	0.16
Cavity wall 40mm EPS	0.22	0.20	0.18	0.17	0.15	0.14
Cavity wall 60mm EPS	0.20	0.19	0.17	0.16	0.15	0.13

\*Insulation thickness only

### Mechanical Fix 2

Insulated plasterboard on proprietary metal furring system.

U-Value calculations to EN ISO:6946

#### SR/TBFL-MF

Thickness (mm)

Wall Type	50mm*	60mm*	70mm*	80mm*	90mm*	100mm*
Brick 225mm	-	0.26	0.23	0.21	0.19	0.17
Stone 600mm	-	0.26	0.23	0.21	0.19	0.17
Hollow Block	-	0.27	0.24	0.21	0.19	0.17
Cavity wall unfilled	-	0.26	0.23	0.21	0.19	0.17
Cavity wall 40mm EPS	0.23	0.20	0.19	0.17	0.16	0.14
Cavity wall 60mm EPS	0.20	0.18	0.17	0.16	0.15	0.13

### Mechanical Fix 4

Insulated plasterboard fixed directly to wall.

U-Value calculations to EN ISO:6946

#### SR/TBFL-MF

Thickness (mm)

Wall Type	50mm*	60mm*	70mm*	80mm*	90mm*	100mm*
Brick 225mm	-	-	0.26	0.23	0.21	0.18
Stone 600mm	-	-	0.26	0.23	0.21	0.18
Hollow Block	-	-	0.26	0.24	0.21	0.18
Cavity wall unfilled	-	-	0.25	0.23	0.20	0.18
Cavity wall 40mm EPS	0.25	0.22	0.20	0.18	0.17	0.15
Cavity wall 60mm EPS	0.23	0.21	0.19	0.17	0.16	0.14

\*Insulation thickness only

# Thermal Liners to Pitched Roofs & Ceilings

Thermal liners can be used to line ceilings and the underside of sloped rafters in dormer roof constructions to achieve better U-Values and provide Enhanced Accredited Detailing.

## Hybrid Roof

Follow the same procedure as a ventilated roof except a breather membrane is used above the rafter allowing the 50mm ventilation space to be dispensed with.

Typically, a 25mm unventilated void should be maintained; Agrément certification covering the membrane should be consulted.



1. In a ceiling, typically fibre glass is placed between and over the joists – this hides the top of the joist and may lead to health and safety concerns when the roof space is being accessed. The thermal bridge which occurs through the joists can be addressed by placing a layer of Thermal Laminate to the underside. This allows for the roof space to be accessed in a safe manner leaving the top of the joists exposed, which allows the roof space to be used for storage.

Alternatively, a layer of insulation – covered with OSB board – can also be placed over the joists. Unilin Walk-R offers a ready made solution for this application.

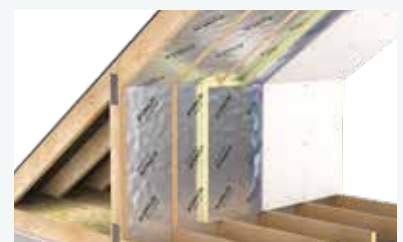


**SCAN  
TO VIEW  
WALK-R  
BROCHURE**

2. In a conventional ventilated roof a 50mm clear ventilation gap should be maintained between the insulation and the roofing felt.

In certain instances when a vapour permeable membrane is used instead of standard roofing felt, the ventilation gap may be dispensed with.

3. Placing a layer of Unilin Thermal Liner to the underside of the rafter provides a 'Robust Detail' and substantially improves the U-Values achieved, with minimum intrusion into valuable living space.



# INSTALLATION GUIDELINES

## Application: Sloped Roof

1. Fix positioning battens to inner face of rafters, flush with the edge of the timber.



2. Allow for ventilation gaps, normally 50mm (may be reduced depending on breather membrane certification).



3. Cut the insulation boards with fine toothed saw to fit tightly between rafters, flush with the bottom of the rafter. Allow slight oversize of cut to achieve 'friction fit' and seal any gaps with expanding foam.



4. Any airtight membrane or vapour control layer can be placed to the underside of the rafters in accordance with the BRE Paper BR262: Condensation avoiding the risks.



5. The additional layer of Thermal Laminate is affixed to the rafters using drylining screws. Where joints between sheets of Laminate are unsupported by the rafters, timber noggins should be installed.

Seal and tape the joints of the plasterboard or alternatively follow plasterboard manufacturer installations guidance.



### Note

When upgrading existing properties, a professional should be engaged to assess the property for appropriate insulation treatments and effective detailing. Walls should be dry and decoration stripped back to the wall substrate. Appropriate ventilation strategies must be considered as part of the overall energy upgrade.

Guidance in PAS2030:2023 'Specification for the installation of energy efficiency measures (EEM) in existing buildings' and BS8212 Code of practice for drylining and partitions should be consulted.



**Unilin Insulation (IRL)**  
Liscarton Industrial Estate  
Kells Road, Navan  
Co. Meath, Ireland  
C15 NP79

**t.** +353 (0) 46 906 6000  
**e.** [info.ui@unilin.com](mailto:info.ui@unilin.com)

[unilininsulation.ie](http://unilininsulation.ie)