



Insulation  
you can trust

**Thin-R Guide**  
Rigid Thermal Insulation



[www.xtratherm.com](http://www.xtratherm.com)

**Xtratherm<sup>®</sup>**

More than insulation.

Choosing the right insulation for your project is a vital step in creating a building which is comfortable, energy efficient and environmentally sustainable. To help you make that decision Xtratherm has prepared this guide to set out the key benefits of Polyiso insulation board.



Xtratherm Polyiso is a foil faced Polyisocyanurate (PIR) insulation board suitable for use in floors, walls and roofs.

Polyiso is formed by a blowing process which generates a rigid foam composed of fine, gas filled bubbles: it is those bubbles

which give Polyiso its superb insulating capability which is manufactured under ISO9001 assured quality system.



The high performance of Xtratherm Polyiso allows designers to create structures which are more energy efficient.

Allows for the design of thinner structures  
Wall cavity insulated with Polyiso may be 50mm thinner than one insulated with mineral wool.

Using Polyiso to insulate pitched roofs at rafter line reduces the load on the fixings restraining the counter battens.



## How good an insulant is Polyiso?

There are three ways in which heat is lost from buildings: conduction through materials, convection by air movement and radiation across cavities. Xtratherm Polyiso helps tackle each one of these.

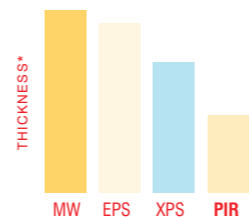


Save Time

Save Space

Save Money

**Conduction:** the thermal conductivity of Xtratherm Polyiso is among the lowest for commonly available insulation boards. The performance comes from the Pentane blowing agent trapped within the foam. Pentane has a good insulating properties. Long term performance is ensured by the foil facings which are gas tight. The table below shows the performance of Xtratherm Polyiso compared to other types of insulation.

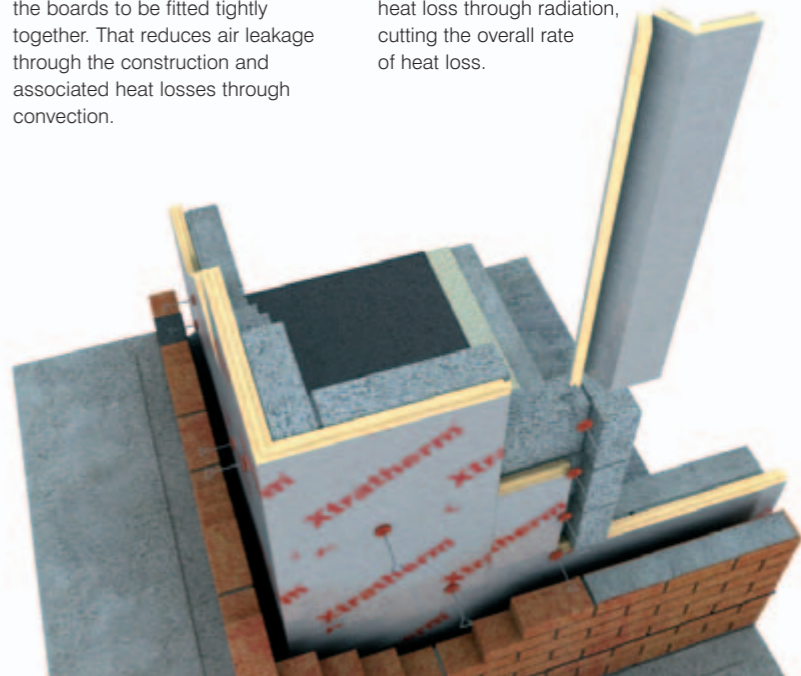


MW - Mineral Wool EPS - Expanded Polystyrene  
XPS - Extruded Polystyrene PIR - Polyisocyanurate

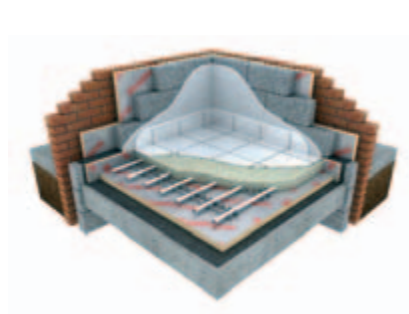
\*Thickness of insulation required to achieve  
 $U = 0.27W/m^2K$  in a partial fill cavity wall

**Convection:** Xtratherm Polyiso boards are manufactured to strict dimensional tolerances, enabling the boards to be fitted tightly together. That reduces air leakage through the construction and associated heat losses through convection.

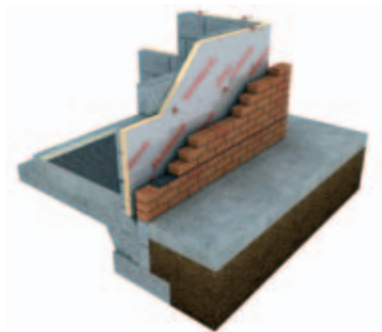
**Radiation:** gas tight aluminium facings form a low emissivity surface which, when facing a cavity reduces the heat loss through radiation, cutting the overall rate of heat loss.



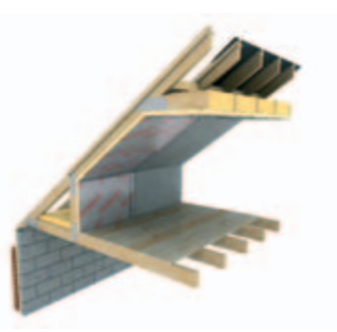
Which parts of a building benefit from Polyiso? Virtually all building elements can be insulated with Polyiso; concrete slab, beam and block or timber floors, masonry or timber framed walls, flat and pitched roofs.



**Thin-R/UF**  
Under Floor



**Thin-R/CW**  
Cavity Wall



**Thin-R/PR**  
Pitched Roof

#### THE EFFICIENT CHOICE

In each case the excellent lambda value and therefore low thickness allows constructions to be thinner than they would be with other insulants.

Not only does that save space, it also has structural benefits; counter battens on warm roofs are not as far above the rafters, reducing the bending forces on fixings; wall cavities need not be as wide to accommodate the insulation. Not only does that have a structural benefit, the narrower wall can release additional space within the building.



## What is the environmental impact of Polyiso?

The low thermal conductivity of Xtratherm Thin-R along with the engineered jointing to provide robust detailing maximises the benefits to users and the environment by reducing energy use which lowers CO<sub>2</sub> emissions.

The environmental performance of our buildings, is coming under constant scrutiny, as building owners, designers and government aim to reduce the emission of greenhouse gases and gases harmful to the ozone layer.

Building regulations have recently been changed to measure CO<sub>2</sub> emissions from our buildings. Maximum targets for these emissions have been set we must demonstrate that our buildings have been designed to stay within these targets. Staying within

this target is the **only** method of showing compliance with the regulations.

A well insulated building fabric, achieving excellent U-values and ensuring 'Continuity' of the insulation system, is the single most effective way of improving energy efficiency within a building. Losing less heat through the walls, floors, roof and glazing reduces the amount of energy required to keep us comfortable - and therefore reduces CO<sub>2</sub>.



With the excellent thickness to performance ratio (R-value) of Xtratherm Thin-R less material is required to achieve the best performance levels asked for in the new building regulations. Excellent U-values can be achieved within standard construction details meaning the loss of valuable living space within rooms is minimised.

Xtratherm Thin-R is manufactured using Pentane as the blowing agent. Pentane is

CFC/HCFC free with zero ozone depletion potential and a Global Warming Potential less than 0.01 (GWP <0.01).



Zero Ozone Depletion Potential



# How does rigid thermal insulation perform? Xtratherm offers complete technical support.

## REACTION TO HEAT AND FLAME

Xtratherm Polyiso is a thermoset insulation; it does not soften and melt when heated. In applications, such as warm flat roofs, where the insulation is directly beneath a single ply membrane, the materials can be subject to temperatures in excess of 70°C. Many plastic insulants will soften and deform at that temperature: Polyiso will remain stable and continue to provide thermal protection for the roof. In the unlikely event of Polyiso being exposed to fire, the surface of

the foam degrades and forms a protective char (like that on timber) which slows the spread of fire through the boards.

## POLYISO LONG TERM PERFORMANCE

Polyiso is a durable material, which has a service life comparable to that of the building. It is dimensionally stable, so will not slump or sag within the construction and is unaffected by repeated cycles of extreme temperature. Unlike fibrous insulation - which loses much of its

insulating capability when wet - Polyiso has a low rate of water absorption; it will continue to perform well in damp conditions and will not rot or decay. Polyiso is compatible with most common chemicals and is unaffected by contact with them.



Our Technical Support team provides assistance on the Xtratherm range

## Thin-R Rigid Thermal Insulation



Technical Support  
[www.xtratherm.com](http://www.xtratherm.com)

## Thin-R/CW

### CAVITY WALL

*Suitable for insulating:*  
Partial Fill Cavity Walls

## Thin-R/TL

### THERMAL LINING

*Suitable for insulating:*  
Masonry Walls  
Sloped Rafters  
Ceilings

## Thin-R/TP

### FLAT ROOF

*Suitable for insulating:*  
New Flat Roof  
Refurbished Flat Roof  
Thermal Decking

## Thin-R/PR

### PITCHED ROOF

*Suitable for insulating:*  
Ventilated Pitched Roof  
Warm Pitched Roof  
Hybrid Pitched Roof

## Thin-R/UF

### UNDER FLOOR

*Suitable for insulating:*  
Solid Block Floor  
Under Screed Floor  
Suspended Timber Floor

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