



L

**Building
Regulations
2007**

Technical
Guidance
Document

**Conservation of Energy
(Dwellings)**
Insulation Guide



Insulation
Distributors Ltd

For Thermal Insulation, giving energy efficiency



Insulation Distributors Limited (IDL), www.insulationdistributors.ie, has operated for over 15 years in the Irish construction market; distributing structural and industrial insulation products from leading manufacturers. Many of IDL's key personnel have had in excess of forty years experience within the market and offer a wealth of experience to the specifier.

IDL is a key business of SIG Ireland (www.sig.ie) a subsidiary of SIG plc, a FT SE 250 company (www.sigplc.co.uk), an international multi site distributor of specialist construction products. SIG Ireland operates through the following four divisions, Interiors, Insulation, Roofing and Specialist Construction Products & Services.

IDL's product portfolio is comprehensive with our distribution centres carrying extensive stocks from leading manufacturers such as Rockwool, Knauf, Bonar, James Hardie and Dow.

This technical document is an extension of our service philosophy. It provides a synopsis of the new building regulation standards part L coming into force in June 2008, for insulation and the conservation of fuel and energy for dwellings.

For further information please do not hesitate to contact your local technical sales representative who's contact details are on the reverse of this brochure.



Fabric Elements	Maximum Elemental U Values
Pitched Roof-Insulation at ceiling level	0.16 W/m ² K
Pitched Roof-Insulation on slope	0.20 W/m ² K
Flat Roof	0.22 W/m ² K
External Walls	0.27 W/m ² K
Ground Floors	0.25 W/m ² K
Other Exposed Floors	0.25 W/m ² K
Technical Guidance Document L 2007 Para 1.3.2.2 Table 1	

Transitional Arrangements

In general, Technical Guidance Document L -Conservation of Fuel and Energy (2007 Edition) applies to works to new dwellings, where the work commences or takes place, as the case may be, on or after 1st July 2008.

Technical Guidance Document L, in relation to dwellings, Conservation of Fuel and Energy (2006 Edition) ceases to have effect from 1st July 2008.

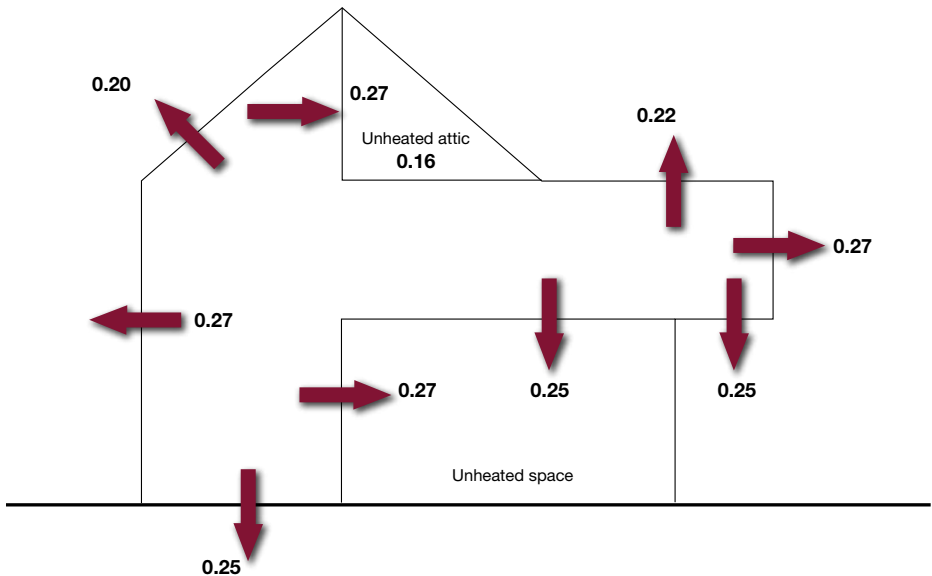
However, Technical Guidance Document L – Conservation of Fuel and Energy (2006 Edition) may be used in the case of dwellings:

- (i) where the work, material alteration or the change of use commences, as the case may be on, or before 30th June 2008,

or
- (ii) where planning approval or permission has been applied for on or before 30th June 2008, and substantial work has been completed by 1st July 2009.



Maximum permitted heat loss through the building envelope



The above shows the maximum permitted U values.

By improving upon the above stated values is to improve on the energy efficiency of the building envelope.

This in turn will reduce energy costs and improve on the

Building Energy Rating

Definitions



U Value, W/m^2K

Defines the ability of an element of a structure to transmit heat under steady state conditions. The lower the figure the better the performance

Good	Better	Best
0.16	0.14	0.12

λ Lambda value W/mK

Defines a materials ability to transmit heat.

The lower the figure the better the performance

Good	Better	Best
0.044	0.032	0.021

R – Value = Thermal Resistance m^2K/W

Defines a materials ability to resist heat flow.

The higher the figure the better the performance

Good	Better	Best
2.50	5.00	7.50



Thermal Conductivity

	Phenolic Foam	Polyiso (PIR) Foam	Extruded Poly (EXPS)	Extruded Poly (EXPS)	Expanded Poly (EPS)	Glass Wool	Glass Wool
	0.021	0.023	0.029	0.030	0.031	0.032	0.033
25	1.190	1.087	0.862	0.833	0.806	0.781	0.758
30	1.429	1.304	1.034	1.000	0.968	0.938	0.909
40	1.905	1.739	1.379	1.333	1.290	1.250	1.212
50	2.381	2.174	1.724	1.667	1.613	1.563	1.515
60	2.857	2.609	2.069	2.000	1.935	1.875	1.818
70	3.333	3.043	2.414	2.333	2.258	2.188	2.121
80	3.810	3.478	2.759	2.667	2.581	2.500	2.424
90	4.286	3.913	3.103	3.000	2.903	2.813	2.727
100	4.762	4.348	3.448	3.333	3.226	3.125	3.030
110	5.238	4.783	3.793	3.667	3.548	3.438	3.333
120	5.714	5.217	4.138	4.000	3.871	3.750	3.636
130	6.190	5.652	4.483	4.333	4.194	4.063	3.939
140	6.667	6.087	4.828	4.667	4.516	4.375	4.242
150	7.143	6.522	5.172	5.000	4.839	4.688	4.545
160	7.619	6.957	5.517	5.333	5.161	5.000	4.848
170	8.095	7.391	5.862	5.667	5.484	5.313	5.152
180	8.571	7.826	6.207	6.000	5.806	5.625	5.455
190	9.048	8.261	6.552	6.333	6.129	5.938	5.758
200	9.524	8.696	6.897	6.667	6.452	6.250	6.061

INSULATION THICKNESS mm

Thermal Resistance

The higher the resistance the greater the saving.

Thermal Conductivity



	<i>Glass Wool</i>	<i>Rock / Glass Wool</i>	<i>Rock / Glass Wool</i>	<i>Rock / Glass Wool</i>	<i>Rock / Glass Wool</i>	<i>Rock / Glass Wool</i>	<i>Rock / Glass Wool</i>
	0.034	0.035	0.036	0.037	0.038	0.040	0.044
25	0.735	0.714	0.694	0.676	0.658	0.625	0.568
30	0.882	0.587	0.333	0.811	0.789	0.750	0.682
40	1.176	1.143	1.111	1.081	1.053	1.000	0.909
50	1.471	1.429	1.389	1.351	1.316	1.250	1.136
60	1.765	1.714	1.667	1.662	1.579	1.500	1.364
70	2.059	2.000	1.944	1.892	1.842	1.750	1.591
80	2.353	2.286	2.222	2.162	2.105	2.000	1.818
90	2.647	2.571	2.500	2.432	2.368	2.250	2.045
100	2.941	2.857	2.778	2.703	2.632	2.500	2.273
110	3.235	3.143	3.056	2.973	2.895	2.750	2.500
120	3.529	3.429	3.333	3.243	3.153	3.000	2.727
130	3.824	3.714	3.611	3.514	3.421	3.250	2.955
140	4.118	4.000	3.889	3.784	3.684	3.500	3.182
150	4.412	4.286	4.167	4.054	3.947	3.750	3.409
160	4.706	4.571	4.444	4.324	4.211	4.000	3.636
170	5.000	4.857	4.722	4.595	4.474	4.250	3.864
180	5.294	5.143	5.000	4.865	4.737	4.500	4.091
190	5.588	5.429	5.278	5.135	5.000	4.750	4.318
200	5.882	5.714	5.556	5.405	5.263	5.000	4.545

INSULATION THICKNESS mm

Thermal Resistance

The higher the resistance the greater the saving.

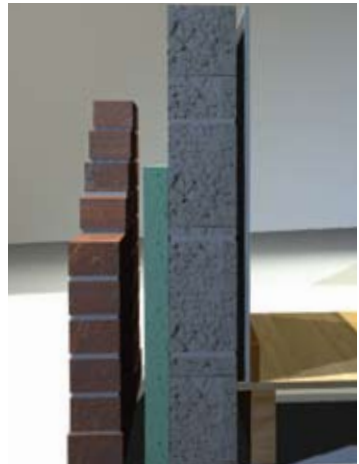
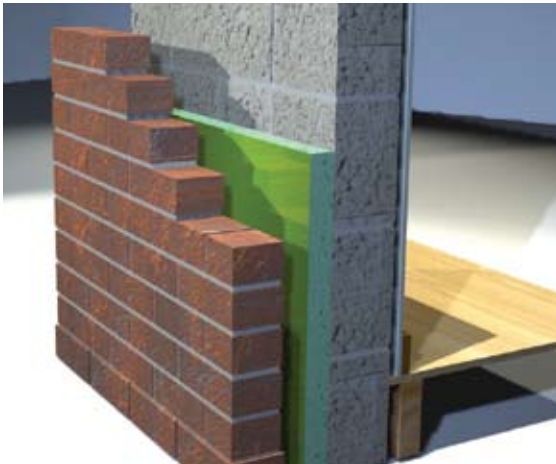


U-Value Calculations

BRE U-value Calculator version 1.20e

0.27 W/m²K

Masonry External Wall: 100mm Total Cavity.			Partial Fill Insulation	
Layer	d (mm)	Layer	R Layer	Description
			0.130	Rsi
1	13	0.180	0.072	Plaster (lightweight)
2	100	1.130	0.088	Concrete block (dense)
3	?	?		Insulation Layer
4	40	R-value	0.644	Low Emissivity Cavity
5	105	0.770	0.136	Brick outer leaf
			0.040	Rse



Layer 3 - Insulation options to achieve a U Value of **0.27 W/m²K**

	λ Lambda	U Value
1: 60mm PIR Rigid Foam	0.023	0.27
2: 60mm Phenolic Rigid Foam	0.021	0.26



U-Value Calculations

BRE U-value Calculator version 1.20e

0.27 W/m²K

Masonry External Wall: 100mm Total Cavity.		Full Fill Insulation		
Layer	d (mm)	Layer	R Layer	Description
			0.130	Rsi
1	13	0.400	0.032	Gypsum plaster (1000 kg/m ³)
2	100	1.130	0.088	Concrete block (dense)
3	?	?		Insulation Layer
4	100	1.130	0.088	Concrete block (dense) protected
5	19	1.000	0.019	Render (cement, sand)
			0.040	Rse



Layer 3 - Insulation options to achieve a U Value of **0.27 W/m²K**

		λ Lambda	U Value
1:	105mm Knauf Dritherm	0.032	0.27
2:	115mm Rockwool	0.035	0.27
3:	125mm Rocksilk	0.037	0.27
4:	100mm Platinum Bead	0.030	0.27



U-Value Calculations

BRE U-value Calculator version 1.20e

0.27 W/m²K

External Timber Frame wall:
15% bridging (as per BRE 443 Conventions)

Layer	d (mm)	Layer	R Layer	Description
			0.130	Rsi
1	12.5	0.210	0.060	Plasterboard
2		1.130	0.088	Vapour Control Layer
3	?	?		Insulation Layer
4	12	0.130	0.092	Plywood Sheathing
5				Breather membrane / DuPont™ Tyvek
6	50	R-value	0.180	Cavity unventilated
7	105		0.136	Brick outer leaf
			0.040	Rse



Layer 3 - Insulation options to achieve a U Value of **0.27 W/m²K**

	λ Lambda	U Value
1: 80mm PIR Rigid Foam	0.023	0.27
2: 75mm Phenolic Rigid Foam	0.021	0.27
3: 140mm Knauf Frametherm	0.035	0.27
4: 140mm Rocksilk Flexible slab	0.035	0.27
5: 140mm Rockwool Flexi slab	0.035	0.27

U-Value Calculations

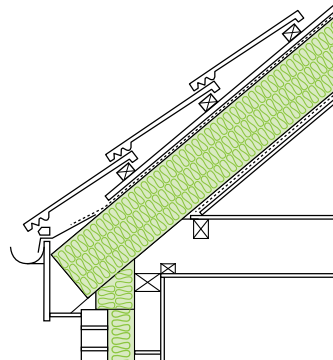
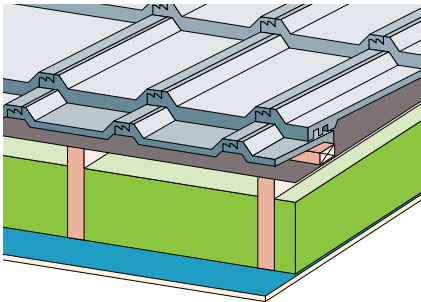


BRE U-value Calculator version 1.20e

0.20 W/m²K

Warm roof / sloping roof solutions:
Insulation between rafters @ 400 ctrs

Layer	d (mm)	Layer	R Layer	Description
			0.100	Rsi
1	12.5	0.210	0.060	Gypsum plasterboard
2	?	?		Insulation Layer
3		0.23		Breather Membrane / DuPont™ Tyvek
4	25	R-value	0.088	Ali Layer Ventilated
5	15	1.000	0.019	Tiles (Clay)
			0.100	Rse



Layer 2 - Insulation options to achieve a U Value of **0.20 W/m²K**

	λ Lambda	U Value
1: 200mm Knauf Rafter Roll	0.032	0.20
2: 180mm Knauf Frametherm	0.034	0.20
3: 165mm PIR Rigid Foam	0.023	0.20
4: 155mm Phenolic rigid Foam	0.021	0.20



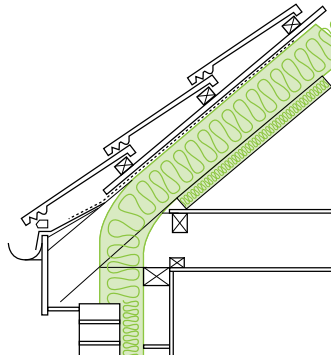
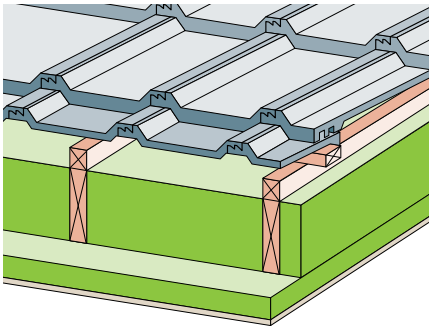
U-Value Calculations

BRE U-value Calculator version 1.20e

0.20 W/m²K

Warm roof / sloping roof solutions:
Insulation between and below rafters @ 400 ctrs

Layer	d (mm)	Layer	R Layer	Description
			0.100	Rsi
1	?	?		Insulated plasterboard
2	?			Insulation
3		0.23		Breather Membrane / DuPont™ Tyvek
4	25	R-value		Ali Layer Ventilated
5	15	1.000		Tiles (Clay)
			0.100	Rse



Layer 1 / 2 - Insulation options to achieve a U Value of **0.20 W/m²K**

	U Value
1 150mm Knauf Crown Wool	0.20
52.5mm overall thickness-PIR Insulated plasterboard	
2 140mm Knauf Frametherm 35	0.20
42.5mm overall thickness-PIR Insulated plasterboard,	

U-Value Calculations

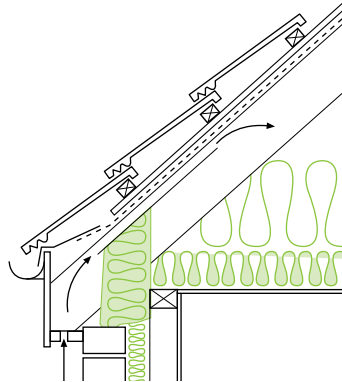
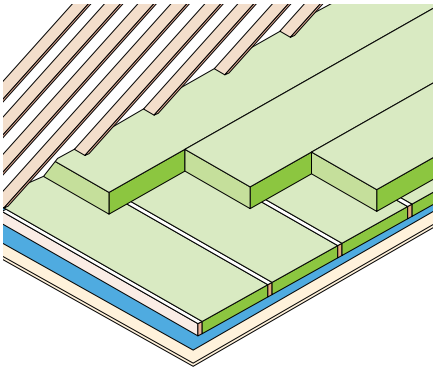


BRE U-value Calculator version 1.20e

0.16 W/m²K

Cold roof / attic space solutions:
Insulation at ceiling level

Layer	d (mm)	Layer	R Layer	I bridge	Description
			0.100		Rsi
1	12.5	0.210	0.060		Plasterboard
2	?	?	?		Insulation
3		R-value	0.200		Roof Space
			0.040		Rse



Layer 2 - Insulation options to achieve a U Value of **0.16 W/m²K**

		λ Lambda	U Value
1:	2 (layer) x 150mm Knauf Crown Wool	0.044	0.15
1:	1 (layer) x 270mm Knauf Crown Wool	0.044	0.16



U-Value Calculations

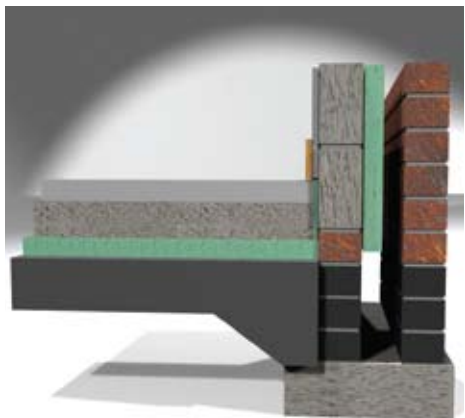
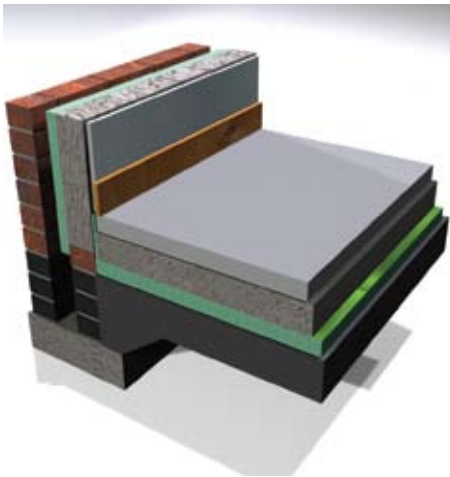
BRE U-value Calculator version 1.20e

0.25 W/m²K

Floor insulation: 75m² ground floor area

Hard Core, sand binding, Radon barrier/damp proof membrane 100mm concrete screed

Layer	d (mm)	Layer	R Layer	Description
			0.170	Rsi
1	100	0.150	0.087	Screed
2	?	?		Insulation Layer



Layer 2 - Insulation options to achieve a U Value of **0.25 W/m²K**

	λ Lambda	U Value
1: 60mm PIR Rigid Foam	0.023	0.25
2: 50mm Phenolic Rigid Foam	0.021	0.25
3: 75mm Extruded Polystyrene	0.029	0.25

U-Value Calculations



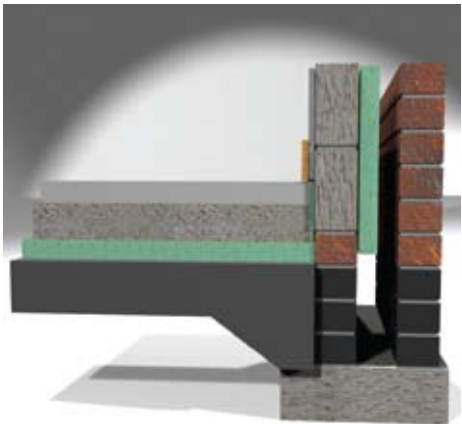
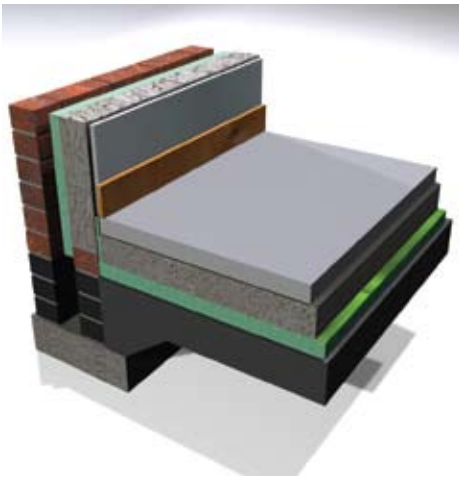
BRE U-value Calculator version 1.20e

0.25 W/m²K

Floor insulation: 150 m² ground floor area

Hard Core, sand binding, Radon barrier/damp proof membrane 100mm concrete screed

Layer	d (mm)	Layer	R Layer	Description
			0.170	Rsi
1	100	0.150	0.087	Screed
2	?	?		Insulation Layer



Layer 2 - Insulation options to achieve a U Value of 0.25 W/m²K

	λ Lambda	U Value
1: 50mm PIR Rigid Foam	0.023	0.25
2: 50mm Phenolic Rigid Foam	0.021	0.24
3: 65mm Extruded Polystyrene	0.029	0.25



Insulation Distributors Limited
For all your Insulation product needs
and much more besides

- Glasswool
- Rockwool
- Polystyrene
- Extruded Polystyrene
- Polyisocyanurate PIR
- Phenolic foam
- Thermal Insulated Plasterboard
- Multi-Foil Insulation
- Single-Foil Insulation
- Foil Tapes
- Pipe Lagging
- Insulated Cavity Closers

- Acoustic Insulated Plasterboards
- Acoustic Impact Barriers
- Acoustic Resilient Barriers
- Acoustic Mastic
- Acoustic Isolation strips

- Breather Membranes
- Thermal Breather membranes
- Vapour Control Layers
- Thermal Vapour Control Layers

- Air Leakage Barriers
- Radon Barriers
- Methane Barriers
- Butyl Barriers
- Radon Sumps
- Top Hats
- Geotextiles

- James Hardie Siding
- James Hardie Tilebacker Board

- Fire Stop Insulation

- Smoke & Fire Barriers
- Cavity Fire Barriers
- Fire Boards
- Fire Collars & Wraps
- Coated Fire Boards

- Shore Laminates Shower & Bath panels
- Drylining Systems
- Access Panels
- Metsec Steel Frame Systems

From Floors to Roofs and Walls
When you ask the question, we give you the answer



Sales & Technical Support

The regulation changes as a result of the new carbon reduction targets is at the forefront of our advice service coupled with new regulatory changes in acoustics and fire protection.

Insulation & Building Products

It is not enough just to know the regulations in regard to insulation products, there has to be knowledge of the interface with other building products.

Promote Insulation Awareness

Insulation within the building envelope can no longer be considered as an afterthought. It offers tangible benefits including, increasing the operating efficiency of the building together with reducing its environmental impact.

By delivering cost effective sustainable solutions, IDL ensures that developers, builders and engineers have access to the most comprehensive and upto date ranges of insulation products from leading manufacturers, to satisfy the most demanding of performance criteria.

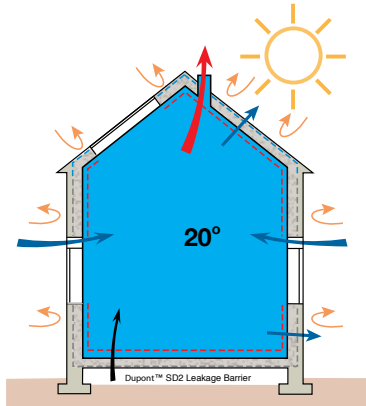
Firesafe, Firestop & Protection Products

Our office and field sales teams can advise on the often confusing field of fire classifications and assist in selecting the right product for the right job.



“Build tight, ventilate right” with the perfect combination of complementary products

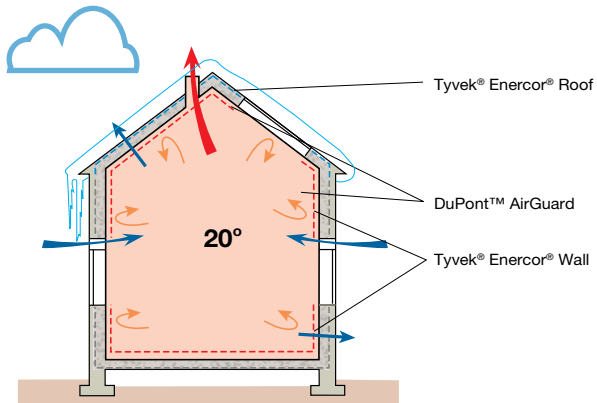
Over 20% of all heat lost that occurs is due to poorly insulated and non-airtight buildings.



“Air tight, vapour open”

Products available through IDL

- 1 Breather membrane / Tyvek® Enercor® Roof
- 2 Vapour control / Air leakage barrier / DuPont™ AirGuard
- 3 Breather membrane / Tyvek® Enercor® Wall
- 4 Tapes and sealant





What Is Air-tightness?

Air-tightness is achieved by controlling the flow of air in a building. When air-tightness is properly applied to a building, leaks will not occur at junctions between ceilings and walls or plasterboard joints. Should a building exhibit a lack of air-tightness this creates a level of heat loss. This leads to discomfort which results from having to operate the heating at a much greater capacity, in order to compensate for the effects of these leaks.

An air-tight building solves a number of issues including protecting the lifetime of the structure. Air-tightness prevents the development of moisture condensation which in turn may cause rot, damp and condensation; this in turn may lead to mould growth which has a high allergic potential which is a health hazard.

The Facts

Air-tightness is essential to achieve the most cost effective use of thermal insulation; this facilitates huge savings over a buildings lifetime. It is environmentally friendly and reduces CO₂ emissions.

Savings in heating costs and cost effective thermal insulation systems are of prime importance to both owners and tenants alike.

The use of fossil fuels can be damaging to the atmosphere and their reserves are limited. Reduction in CO₂ emissions can alleviate the effect of greenhouse gases and protect the environment.

All current indications point to the inclusion of air-tightness requirements in future revisions to the building regulations.

Every new or refitted thermal insulation system requires a functioning airtight seal, if its effectiveness is to be fully realised.



Dow Building Solutions

A comprehensive range of blue extruded foamed polystyrene boards designed to provide thermal insulation in roofs, walls, floors and basements. These highly durable products provide increased energy savings, good mechanical strength and low water absorption.

		ROOFMATE SL-X	ROOFMATE SL-A	ROOFMATE LG-X	ROOFMATE RL-X	FLOORMATE 200-X	STYROFOAM SP-X	FLOORMATE 500-A	FLOORMATE 700-A	PERIMATE DI-A
Applications										
Warm flat roof	Insulation below light coloured SPRM				•					
	Gravel covered	•	•							
Inverted roof	Paved	•	•							
	Roof garden	•	•							
	Roof top car parks	•	•					•	•	
	Lightweight			•						
Pitched roofs	Insulation at rafter level				•					
Walls	Below ground/basement									•
	Above a concrete slab							•	•	•
Floors	Covered with screed							•	•	•
	Covered with chipboard/timber							•	•	•
	Below a concrete slab							•	•	•
	On precast units							•	•	•
Agricultural facilities	Block and beam							•	•	•
	Industrial floors							•	•	•
	Floors							•	•	•
	Roofs				•					



Authority Products are the subject of Agrément Certs as follows: 97/3431 - **ROOFMATE™ SL-X** in the inverted roof concept; 92/2782 - **FLOORMATE™ 200-X**, **STYROFOAM™ SP-X** flooring insulation.

DESCRIPTION

Composition, manufacture
All products are coloured blue and comprise a uniform structure of closed cells that provide the high insulation value. HCFCs are not used. The **-X products** use HFC blowing agent; ODP zero & GWP 1300.

-A products are blown using carbon dioxide; ODP is zero, GWP is 1. **ROOFMATE RL-X** is designed as the thermal insulation layer in flat and low slope roofs, specifically for use under light coloured polymeric single-ply membranes.

ROOFMATE SL-X, **ROOFMATE SL-A** and **ROOFMATE LG-X** are used in 'inverted' roofs where the insulation is applied above the waterproof membrane and is ballasted. **ROOFMATE SL-X** and **SL-A** are used with the **ROOFMATE Min K system** on concrete decks.

ROOFMATE LG-X is used on lightweight roofs. The qualities of both products - resistance to water absorption, unaffected by the freeze-thaw cycling and resistance to handling and surface traffic - make them ideal for this use.

ROOFMATE RL-X is used in warm pitched roofs. **FLOORMATE 200-X**, **FLOORMATE 500-A** and **FLOORMATE 700-A** and **STYROFOAM SP-X** boards are used to thermally insulate all floor types from housing to industrial and cold stores.

PERIMATE™ DI-A is used for the external insulation of basement walls and is designed to filter and channel ground water away from the board face.

PERFORMANCE

High compressive strength. Low thermal conductivity. Low water absorption. **Fire classification** - see BS EN 13164 Euroclass: E. Maximum recommended continuous operating temperature is 75°C.

Dow Chemical Company Ltd
Building Solutions
Diamond House
Lotus Park
Kingsbury Crescent
Staines
TW18 3AG

Tel: +44 (0)20 3139 4000
www.dowconstruction.co.uk

Technical Literature:
All literature is available in printed format and at
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Mount Batten Centre

TRUST

CONSTRUCTION PROJECTS BUILT ON TRUST

Designing, constructing and owning buildings comes with huge responsibilities.

The Government is laying down the law on crucial issues such as:

- Fire safety
- Thermal performance
- Acoustics
- Environmental responsibility

Rockwool Insulation leads the way on all these issues.

No one knows more about stonewool insulation than Rockwool.

Our customers have faith in our unrivalled experience and reliability.

It's a relationship built on trust.

ROCKWOOL

THE DIFFERENCE BETWEEN

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W/m²K

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SQUEEZE

AND FIT WITH EASE

FLEXI INSULATION

Introducing FLEXI from Rockwool's Core Range – the ingenious volcanic rock slab with the flexi-edge that makes installation so easy. Simply push in the Flexi-edge, insert between joists, timber or metal studs, let go and it springs back to shape to create a tight, snug fit. It couldn't be easier.

A PERFECT FIT, EVERY TIME

- No gaps at the edge of the timber
- No energy loss through poor fitting

NO WASTE

- Little or no cutting
- Suits both 400mm and 600mm centres so you can use every millimetre

SQUEEZE BETWEEN STUDS...



AND LET GO...



FOR THE PERFECT FIT



NOW
AVAILABLE
400mm
& 600mm
WIDE



ROCKWOOL INSULATION



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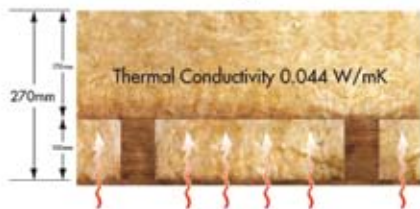
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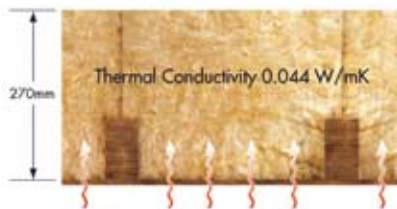
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