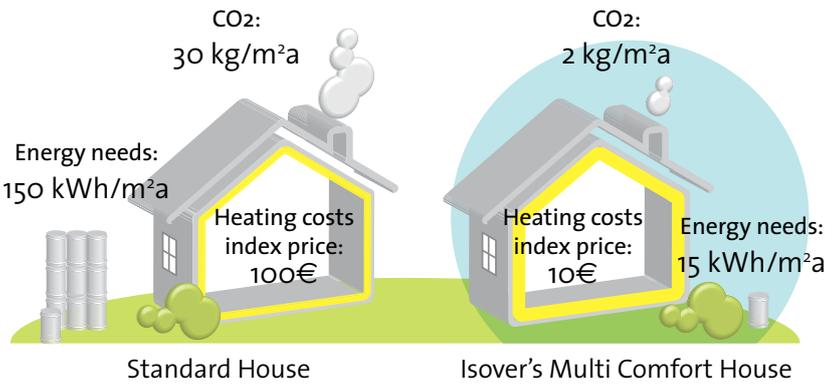




## OPTIMA Dry Lining System High Performing, Easy & Quick



Sustainable Insulation Solutions



## The Problem

### High Energy Costs: Low Comfort Levels

A problem typical of older Irish houses is ever-increasing heating costs without corresponding increases in temperature and comfort. Insulation was not a priority years ago and efficient thermal insulation materials were not readily available.

We are all aware that today's building standards don't accept such inadequacy in insulation – and in the future they will be even less tolerant. Modern techniques and products have been developed that eliminate drafts and ensure comfortable internal conditions.

But what if you have an older home? Older houses are considerably less energy-efficient, wasting heat year-round through poorly insulated walls and rarely achieving sufficient warmth in the winter. That's why we've developed OPTIMA.

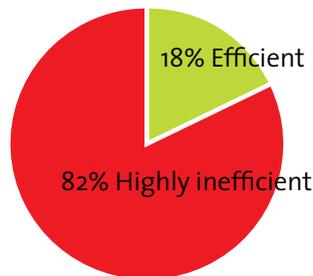
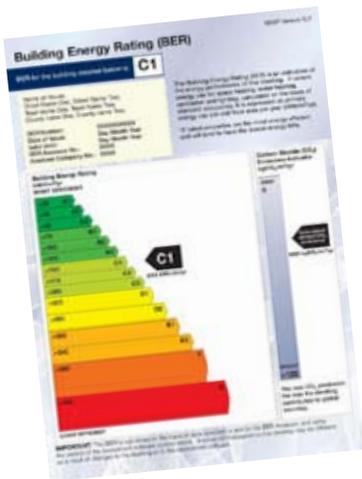
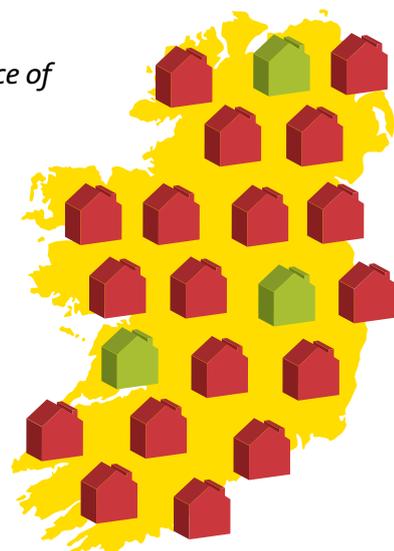


Fig 1: BER Cert

Fig 2: Energy performance of existing housing stock



? Need to insulate external walls on the inside to retain heat control noise and draughts?

# The Solution

## The OPTIMA Dry Lining System from Isover

### What is OPTIMA?

OPTIMA is the high performance solution for insulating new and older houses from the inside. Essentially, it's an innovative dry lining system developed by insulation specialists Isover to significantly improve thermal and sound insulation.

Our insulation products are renowned for their quality and reliability. As the newest addition to the Isover family OPTIMA is designed specifically for homes where outer facade or wall cavity insulation is simply not a viable option.

OPTIMA addresses this with an easy-to-install, cost-effective alternative for renovating and insulating external walls from the inside.

### Where to use OPTIMA?



*Residential*



*Non Residential*



*New and Old*

### Why choose OPTIMA?

There are several key features that make OPTIMA dry lining insulation system the perfect solution for interior thermal and acoustic insulation of walls:

- Perfect thermal and acoustic performance
- Eliminates thermal bridges
- Adjustable system addresses all wall types and issues
- Dry, clean, lightweight system with minimal waste, enabling rapid construction times
- Optional airtightness & moisture control feature
- Economical



The solution is  
**OPTIMA**  
Dry Lining System



# 7 basic installation steps

## OPTIMA system

### I. Metal frame

1. OPTIMA Floor and ceiling U-channel
2. OPTIMA 500mm extension
3. OPTIMA 2.4m C-channel
4. OPTIMA Clip system: OPTIMA2 Support (for new walls) or OPTIMA Direct Support (70 – 160) (for renovation walls)

### II. Insulation

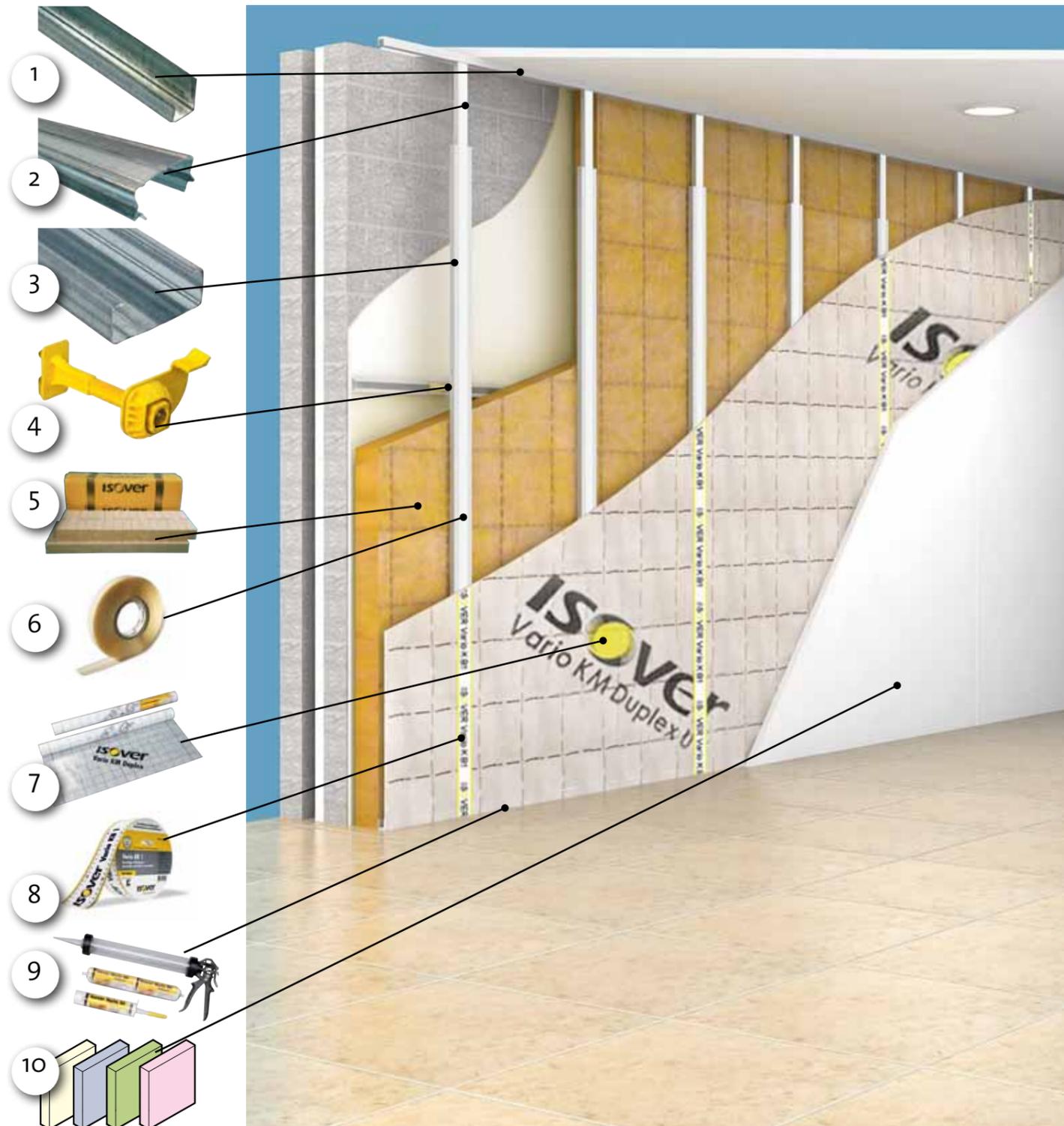
5. ISOVER insulation material, e.g. Standard Performance Comfort roll 35 (standard = 0.035W/mK) or Ultra Performance Comfort Panel 32 (Ultra = 0.032 W/mK)

### III. Air tightness & Moisture control layer (optional)

6. VARIO Protape (double sided)
7. VARIO KM Duplex UV air tightness & moisture control layer
8. VARIO KB1 one-sided adhesive tape
9. VARIO DS Mastic

### IV. Facing

10. Gyproc Plasterboard (various specifications of boards available)



1. Secure 2.4m C-channel @1.35m



2. Secure floor and ceiling U-channel



3. Fix plastic clip on horizontal C-channel



4. Hang insulation on plastic clips



5. Fix plastic clip on vertical C-channel, adjust until plumb and lock in place



6. Fix Vario and accessories



7. Fix Plasterboard



# OPTIMA System components explained

## I. Metal frame

OPTIMA Metal frame – light, solid, flexible

The standard elements that make up the OPTIMA frame ensure the system is both mechanically stable and economical. The structure can be adapted to fit virtually every building type, regardless of any discrepancies in the existing wall surfaces.

For the facing support, the OPTIMA C-channel (a 2.40m metal stud) together with OPTIMA 300 and 500 extension pieces can be used to extend or adjust to the required height.



Fig 4: Height adjustable metal studs

## II. Insulation

ISOVER insulation for OPTIMA – of 2 grades: Comfort Roll 35 (standard  $\lambda = 0.035 \text{ W/mK}$ ) or Comfort Panel 32 (higher performing  $\lambda = 0.032 \text{ W/mK}$ )

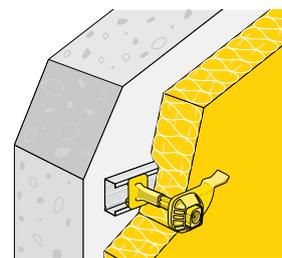
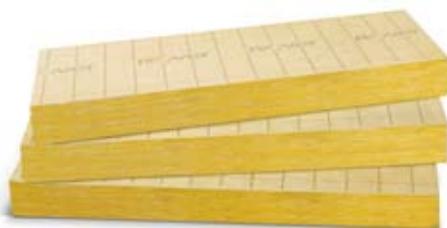


Fig 3: Plastic Clip Locking System

### Summary of benefits

- Avoids thermal bridges, as the insulation layer is continuous
- Precise, easy and practical installation and adjustment
- Plastic clip locking system ensures studs are firmly secured in position
- Time saving installation

### Summary of benefits

- Products with low thermal conductivity save space and increase thermal insulation performance
- Soft tissue faced for easy handling, with gridlines to aid installation
- Compressed products save space and time, both for transport and distribution on site
- "A" Fire rating and CE mark certified

### III. Air tightness & Moisture control

VARIO is Isover's solution to air tightness and protection against moisture.

VARIO's unique quality is its ability to change its water vapour performance. The VARIO membrane adapts and reacts naturally, changing its permeability according to humidity conditions, allowing closed building systems to increase their drying potential. This means VARIO is truly multifunctional, acting as a barrier in winter and a breathable membrane in summer.



#### Summary of benefits

- Dual functionality – humidity regulation: improved and faster drying out in summer, and secure barrier in winter
- Reliable functionality with matched components
- VARIO KM Duplex UV – printed guidelines for easy accurate cutting

### IV. Facing

Gyproc plasterboards are the modern way to provide high quality, high performance linings for today's buildings. Available in an unrivalled range of types and sizes. Choose from:

**Gyproc 8x2's** - The perfect solution for areas where space is tight. Comes with tapered edges for jointing and can be finished with Skimcoat plaster.



**Gyproc SoundBloc** - For improved acoustic performance, to achieve a quieter environment.



**Gyproc Moisture Resistant** - This Gypsum plasterboard has water repellent additives in its core and a special green paper liner. Perfect for bathrooms and kitchens.



**Gyproc Wallboard** - The standard board for use in wall and ceiling applications where basic fire and acoustic performance levels are required.



**Gyproc Rigidur** - Contains Gypsum, paper fibres and mineral additives, can support loads up to 55kg without grounds and is ideal for fixing kitchen units and TVs.



#### Summary of benefits

- Suitable for every design
- Quick assembly
- Smooth and level surface
- Wide choice of boards to suit specific performance requirements



# OPTIMA System - High level thermal performance

OPTIMA's impressive thermal insulation performance is clearly demonstrated by the following calculations. The table below indicates the insulation performance one can expect using the OPTIMA System with different types of wall construction.

0.27 W/m <sup>2</sup> K	Current R.O.I. Building Regulation as of 2010
<b>0.20 W/m<sup>2</sup>K</b>	<b>Isover recommends!</b>



## 215mm Hollow Block

15mm external render  
215mm Hollow block  
+ insulation + Vario  
+ Gyproc wall board



Insulation	U value W/m <sup>2</sup> K	Total thickness of system (mm)
120mm Comfort 32	0.23	152.5
<b>140mm Comfort 32*</b>	<b>0.20</b>	<b>172.5</b>
120mm Comfort 35	0.24	152.5
140mm Comfort 35	0.21	172.5
160mm Comfort 35	0.19	192.5
180mm Comfort 35	0.17	212.5

\*Isover recommends for better performance



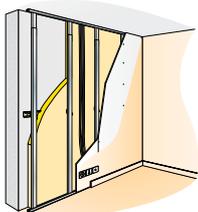
## Partial Fill Masonry Cavity Wall Insulation

15mm external render + 100mm block  
+ 50mm cavity + 50mm foam (0.038)  
+ 15mm external render  
+ 100mm block + 13mm plaster  
+ insulation + Vario  
+ Gyproc wall board



Insulation	U value W/m <sup>2</sup> K	Total thickness of system (mm)
60mm Comfort 32	0.26	92.5
120mm Comfort 32	0.18	152.5
140mm Comfort 32	0.16	172.5
60mm Comfort 35**	0.27	92.5
80mm Comfort 35	0.24	112.5
100mm Comfort 35	0.21	132.5
<b>120mm Comfort 35*</b>	<b>0.19</b>	<b>152.5</b>

\*Isover recommends for better performance \*\*Current Building Regulations



## Concrete Wall

15mm external render  
+ 200mm Concrete  
+ 13mm internal plaster  
+ insulation + Vario  
+ Gyproc wall board



Insulation	U value W/m <sup>2</sup> K	Total thickness of system (mm)
120mm Comfort 32	0.24	152.5
<b>140mm Comfort 32*</b>	<b>0.20</b>	<b>172.5</b>
120mm Comfort 35	0.26	152.5
140mm Comfort 35	0.23	172.5
180mm Comfort 35	0.18	212.5

\*Isover recommends for better performance



## Timber Frame Wall

100mm block  
+ 50mm cavity  
+ breather membrane + 12mm OSB  
+ 150mm Metac (between studs)  
+ insulation  
+ Vario + Gyproc wall board



Insulation	U value W/m <sup>2</sup> K	Total thickness of system (mm)
60mm Comfort 32	0.19	92.5
<b>60mm Comfort 35*</b>	<b>0.20</b>	<b>92.5</b>
80mm Comfort 35	0.18	112.5

\*Isover recommends for better performance



## Single Brick Construction

100mm brick  
+ 13mm plaster  
+ insulation + Vario  
+ Gyproc wall board



Insulation	U value W/m <sup>2</sup> K	Total thickness of system (mm)
60mm comfort 32	0.44	92.5
120mm Comfort 32	0.24	152.5
<b>140mm Comfort 32*</b>	<b>0.21</b>	<b>172.5</b>
80mm Comfort 35	0.37	112.5
100mm Comfort 35	0.31	132.5
120mm Comfort 35	0.26	152.5
140mm Comfort 35	0.23	172.5

\*Isover recommends for better performance

\*\*Northern Ireland Regulations as of 2010 = 0.35 W/m<sup>2</sup>K

# Acoustic performance

Indoor acoustic comfort should be provided by the building envelope to protect against noises from outside and adjoining properties.

When applied to existing wall constructions, the OPTIMA System can significantly increase the sound insulation performance of a building, providing an increased level of personal privacy in the home. The acoustic insulation of a construction in-situ is determined by the Apparent Weighted Sound Reduction Index: R'w. This index is expressed in decibels (dB), whereby the higher the R'w value the better the sound insulation performance.

The table below lists some examples of estimated R'w values for common construction types in Ireland and the expected improvement following the installation of the OPTIMA system to one side.

Base Construction	Thickness of ISOVER glass wool with AFr ≥ 5 kPa.s/m <sup>2</sup>	OPTIMA Lining	In-situ Sound Insulation Performance, dB R'w		Gain in Sound Insulation Performance, dB
			Base Construction	Base Construction + OPTIMA	
215mm solid blocks with 12.5mm sand/cement render on both sides	50mm	12.5mm Plasterboard	54	63	9
	100mm			64	10
	160mm			65	11
200mm precast concrete	50mm	12.5mm Plasterboard	55	64	9
	100mm			65	10
	160mm			66	11
215mm concrete block	50mm	12.5mm Plasterboard	53	65*	12
	100mm			66*	13
	160mm			67*	14
Two leaves of 100mm dense concrete blocks with 100mm cavity	50mm	12.5mm Plasterboard	58	67*	9
	100mm			68*	10
	160mm			68*	10

\*This level of sound insulation performance is based on a construction comprising the described base construction only. Any compound elements to the overall construction, e.g. windows, doors etc., will result in a significant reduction in the overall performance.

# Moisture control performance

Ireland's high levels of humidity make it essential to ensure that no condensation risks can occur within the construction. Simulating The OPTIMA system on 215mm Aerated Concrete using WUFI\*, we can see that moisture accumulation is not an issue due to the performance of the Vario vapour control membrane.

The example shown is a 3 year simulated model of a 215mm aerated concrete block that is insulated internally with worst case scenario conditions i.e. North orientated with a high internal moisture load. Without Vario, a moisture accumulation on the internal face of the concrete wall can be seen in Fig 5, however when Vario is introduced not only is the structure airtight but you are also protected from moisture Fig 6.

\*(WUFI-ORN/IBP is a menu-driven PC program which allows realistic calculation of the transient coupled one-dimensional heat and moisture transport in multi-layer building components exposed to natural weather)

Fig 5: WUFI chart - without Vario layer

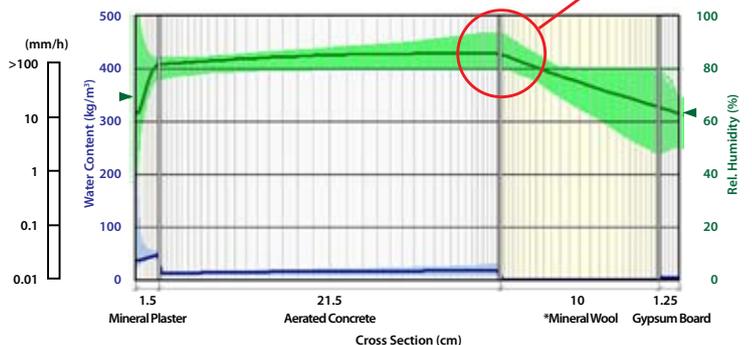
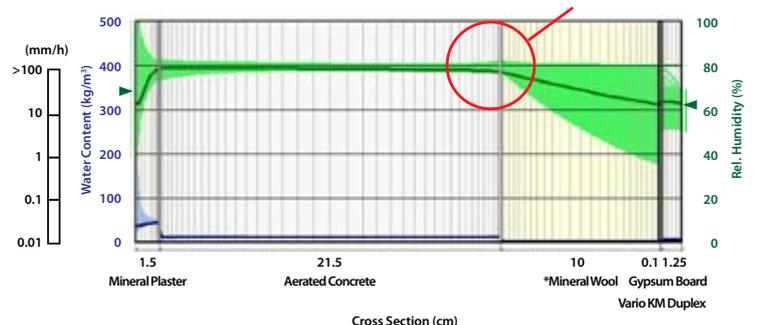


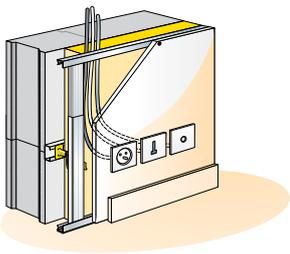
Fig 6: WUFI chart - with Vario layer





# Dealing with specific issues

Picture 1



## Integrating Services

Standard electrical appliances, home automation and networking have led to an increase in cabling and ducting that need to be included in buildings (Picture 1).

The OPTIMA System allows the integration of such networks in the lining without compromising insulation. The networks are run between Isover glass wool and plaster boards. VARIO Multitape SL is used to ensure breakout points are both vapour and air tight.

## Window Details

The position of the windows has to be taken into account. Frame out window using C-channel above and below window as shown (Picture 2). The OPTIMA connector (Picture 3) is used to construct T-joints between OPTIMA vertical and perpendicular studs, for instance to accommodate a window frame (Picture 4).

Picture 2



Picture 3



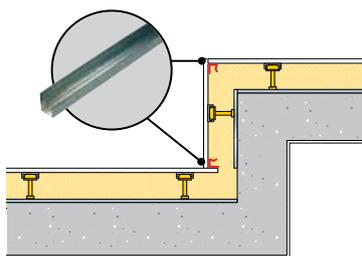
Picture 4



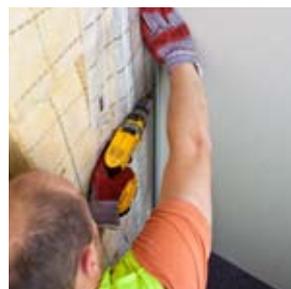
## Cornering Details

An OPTIMA Floor and Ceiling U-channel can be used for corner detailing (Picture 5 and 6).

Picture 5



Picture 6



# OPTIMA System - production specification

## ISOVER Insulation Material

### Isocomfort 35 Roll with $\lambda = 0,035 \text{ W/mK}$

R m <sup>2</sup> .K/W	Thickness (mm)	Length (m)	Width (m)
5.14	180	2300	1200
4.57	160	2600	1200
4.00	140	3400	1200
3.43	120	3900	1200
2.86	100	4500	1200
2.29	80	5300	1200
1.71	60	7000	1200

### Isocomfort Panel 32 with $\lambda = 0,032 \text{ W/mK}$

R m <sup>2</sup> .K/W	Thickness (mm)	Length (m)	Width (m)
4.38	140	1200	600
3.75	120	1200	600
1.88	60	1200	600



### Insulation Cutter

Double edge knife for cutting the insulation material.

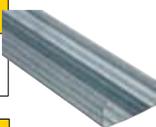
## The Accessories

### OPTIMA

Article No. 5200425735	Packaging
OPTIMA Floor and ceiling U-channel length: 2.35m	Pallet of 12 bundles of 20 units = 564 m



Article No. 5200425740	Packaging
OPTIMA C-channel Length: 2.4m	Pallet of 40 bundles of 10 units = 960 m



Article	Packaging
OPTIMA 300mm extension	Pallet of 40 bundles of 10 units = 120 m



Article No. 5200425741	Packaging
OPTIMA 500mm extension	Pallet of 40 bundles of 10 units = 200 m



Article	Packaging
OPTIMA Support 75	50 pieces

Article	Packaging
OPTIMA Support 100	50 pieces

Article	Packaging
OPTIMA Support 120	50 pieces

Article	Packaging
OPTIMA Support 140	50 pieces

Article	Packaging
Optima Direct Support (70 - 160)	40 pieces

Article No. 5200537462	Packaging
OPTIMA Connector	25 pieces



### Vario

Vario KM Duplex UV 5200300299	
Length - Width	Packaging
40 m - 1.5 m	60 m <sup>2</sup> / roll



Vario KB1 - Single sided tape 5200300297	
Length - Width	Packaging
40 m - 60 mm	5 rolls = 200 m



Vario Protape 5200300296	
Length - Width	Packaging
10 m - 25 mm	5 rolls = 50 m



Vario DS Mastic 5200300295	
Length - Width	Packaging
310 ml	12 pieces



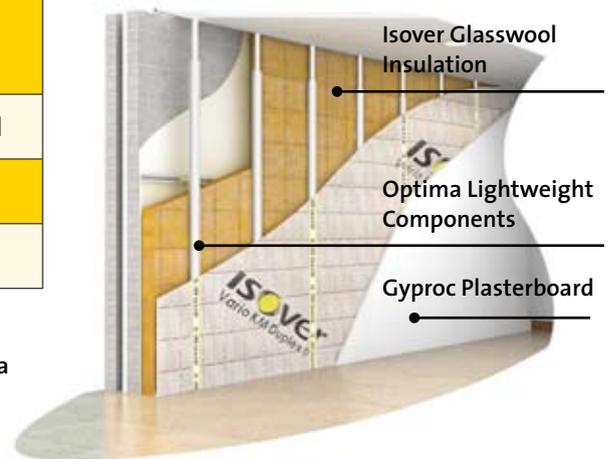
Vario Multi tape SL 5200431017	
Length - Width	Packaging
25 m - 60 mm	10 rolls = 250 m



# OPTIMA System - sample calculation (5m of wall)

What you would need to install the OPTIMA System on five metres of wall?

OPTIMA Floor and ceiling U-channel	5 lengths
OPTIMA 2.4m C-channel	10 lengths
OPTIMA 500mm Extension piece	8 pieces
OPTIMA Clip system	10 pieces
ISOVER Insulation material eg Comfort panel 120mm	13.5m <sup>2</sup>
Vario DS mastic	2 cartridges of 310ml
Vario KM Duplex UV	15m <sup>2</sup>
Vario KB1	5.2m



This sample table gives an indication of the materials needed based on a wall height of 2.7 m and spacing of vertical studs at 600 mm centres.



SpecSure® is a unique 'off the shelf' life time warranty

To qualify for SpecSure® simply specify and install the Optima system in conjunction with Gyproc plasterboards in line with the recommendations in both current Product Manuals. (Gyproc Product Manual & Isover Optima Installers Guide)

## About ISOVER:

ISOVER is committed to comfortable living and climate protection. We believe in developing products to create a better, more comfortable world. Already, ISOVER insulation warms and protects 1 in 3 homes in Europe and 1 in 5 in America. Our products save you energy and money; but they also come with a proven environmental pedigree. As Europe's leading producers of high-performance insulation materials, we strive every day to develop increasingly efficient and resource-saving products. We know our responsibility to the earth and continually innovate to deliver the best products to our customers.