

NEW Vario KM Duplex UV

The unique climate membrane for timber frame construction



ISOVER

The world's leading Acoustic & Thermal Insulation

New Vario KM Duplex UV



Specifiers are now under immense pressure to deliver the Government's promise of sustainable, energy efficient housing. So it's no surprise that many conventional materials and techniques no longer deliver the performance levels needed.

'Warm side' membranes for timber framed construction are a good example. Traditional PE films represent old technology and will increasingly present performance difficulties as we move into next-generation housing design.

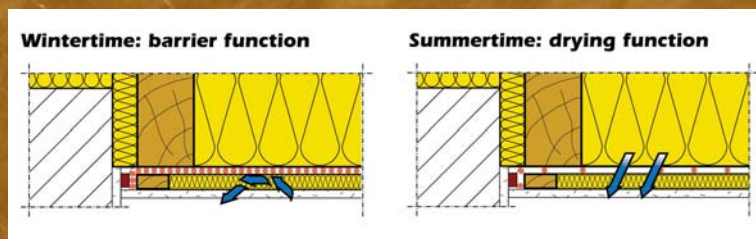
Vario is the world's most advanced solution for the management of interstitial moisture in timber framed construction. Developed by the Fraunhofer Institute in Germany and available exclusively from ISOVER, Vario polyamide technology has been extensively tested and specified in high volume timber frame construction across Northern Europe and Scandinavia.

In the UK, Vario offers specifiers of timber frame housing a complete solution going forward - unique technology to meet tomorrow's demands that you can specify today.

The unique moisture management system which acts like a sensitive skin.

Protected by a worldwide patent, the Vario membrane acts like a sensitive skin - altering its structure depending on relative humidity:

The Vario Effect in winter. Micropores in the membrane close, preventing vapour from the warm interior diffusing into the timber structure and so protecting against potentially damaging interstitial condensation.



The Vario Effect in summer. As the structure warms, moisture that has entered the timber structure from outside will vaporise. Responding to this pressure the membrane's micropores open, allowing the vapour to escape and diffuse harmlessly into the building interior.

One of Vario's key features is its variable sd-Value. This allows the membrane to diffuse 25 times more moisture in summer than the structure absorbs during winter. No other 'warm side' membrane can match this performance.

This standard of moisture management also provides unrivalled protection for timber structures in other ways, for example:

- Wet timber following rainfall during construction dries out faster
- Water ingress from leakages is managed effectively
- The membrane automatically adapts to long heating & short drying periods, unlike conventional membranes that behave the same way in all conditions.

Vario. The climate membrane that thinks for itself.

Airtightness that meets
present and future standards
head on.





The new Part L1A Regulations that came into effect in April 2006 focus on the conservation of fuel and power within new dwellings. Almost without exception these structures will require an Airtightness Test to a standard of $10\text{m}^3/(\text{h}/\text{m}^2)$ at 50 Pa.

A test fail could have costly consequences, particularly when the time frame for a building sign-off is tight. Airtightness in new buildings should therefore be considered a key issue at the design stage - a culture of 'filling gaps' after construction will not deliver the performance expected.

The Vario system is purpose-designed to deliver airtightness.

Specifiers dealing with timber framed buildings start with an advantage in that the impermeable vapour barrier can also act as an effective air barrier - providing exceptional airtightness of the building envelope.

Because Vario is a complete system of membrane, tapes and sealant designed to work together, Vario is quick and easy to install avoiding the well publicised problems of ineffective conventional vapour barriers. Once installed the system remains durable and intact during the lifetime of the building. Recent tests have shown that the use of Vario can deliver airtightness levels far lower than the $10\text{m}^3/(\text{h}/\text{m}^2)$ minimum regulatory requirement.

Performance to maximise your leading edge ventilation solutions.

By specifying the Vario system, the building envelope will be capable of supporting the controlled airflow necessary for the operation of leading edge ventilation systems, boosting the heat recovery potential of outgoing air.

Vario as a toxicity barrier

Another unique characteristic of the Vario system is its ability to protect the inside of the building and its occupants against toxic gases which may emanate from chemical preservatives contained within the timber structure. This is particularly important when converting the lofts of older buildings into living space, as the type and toxicity of any preservatives is unknown and therefore potentially hazardous.



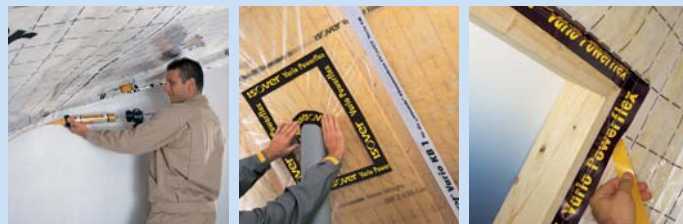
Made to measure
so it's easier to fit.





As all specifiers know, choosing the highest performing product for the job is only half the equation. The advantage is lost if installation on site is compromised. That's why all the components of the Vario system have been specially developed to work together.

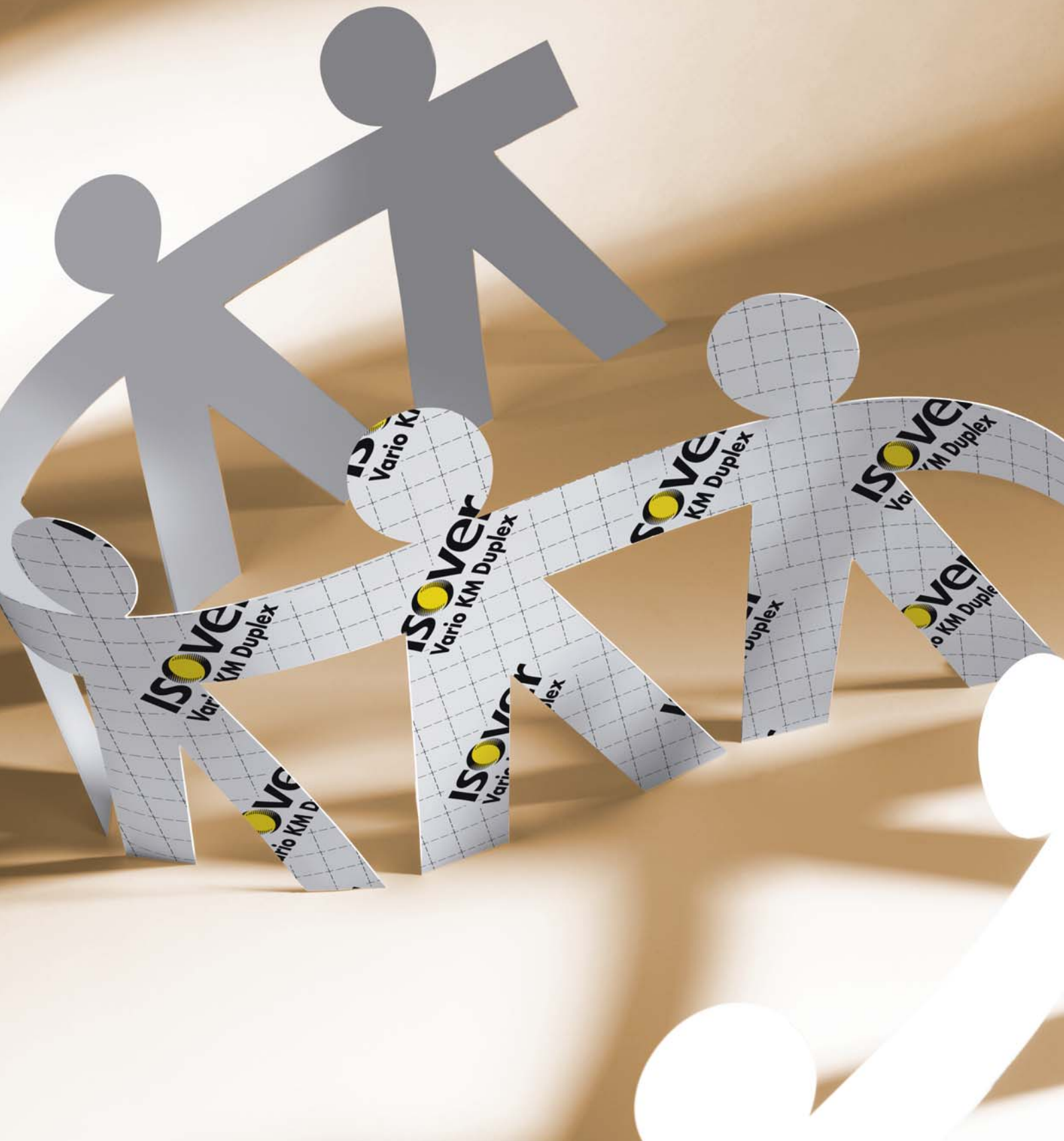
- **KM Duplex membrane** is supplied in roll dimensions compatible with modern construction methods, making it easy to handle and cut. With a tensile strength three times stronger than polythene, it is much less likely to be damaged during installation.
- **Vario Powerflex tape** has extremely high adhesion for sealing overlapped membrane joints and, crucially, sealing effectively around the gaps left after the installation of services. This very powerful sealing performance is key to the effectiveness of both moisture management and airtightness. The tape is non-ageing, so will go on doing its job for the life of the property.
- **Vario KB1 tape** high adhesion, single sided tape providing wind and air tight adhesion of the membrane for horizontal and vertical overlapping.
- **Vario DS Permanent Elastic sealant** completes the system, making short work of bonding the membrane edges to any current building structure material.



Resistant to UV light

The Vario membrane is also resistant to damaging ultra-violet light, offering stockists increased shelf life and contractors a greater level of protection on site.

Helping you build homes for
future generations.



The most inexpensive energy is the one that is not consumed in the first place. It does not need to be generated, imported, or paid for. Naturally, it doesn't have any harmful effects on human beings or the environment. This is the basic concept of the PassivHaus principle.

In Europe this concept has been shown to reduce energy use by up to 90% compared with older building stock, and 5,000 dwellings have already been constructed according to its principles. By 2013, UK building practice will need to conform to PassivHaus performance levels.

The four pillars of the PassivHaus approach:

- Excellent airtightness.
- Good levels of insulation and minimal thermal bridges.
- Whole house mechanical ventilation and heat recovery.
- Good utilisation of solar and internal gains.

The Vario system can help you deliver the best

Because complete vapour barrier airtightness is so easy to achieve using the integrated Vario system, it can help you deliver homes that use less than a tenth of the heating energy used by older buildings.

PassivHaus energy use criteria for northern Europe

- Total for space heating & cooling less than 15 kWh/m²/yr treated floor area.
- The combined primary energy consumption of the living area must not exceed 120 kWh(m²a) for heat, hot water and household electricity.

For more information about how you can work towards the PassivHaus standard visit www.passivhaus.org.uk or for information on the ISOVER Multi-Comfort House visit www.isover.com.



Timber frame applications combining IS

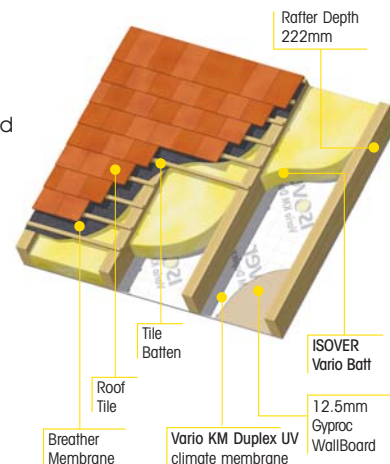
Insulating a new build warm roof.

Insulation: ISOVER Vario Batt

Solution to meet the ISOVER suggested U-value of 0.20 W/m².K (England & Wales)

Tiled or slated roof on tiling battens on breather membrane on 48mm thick x 222mm deep rafters. **ISOVER Vario Batt** installed in 2 x 100mm thickness between the rafters, leaving a 22mm airspace adjacent to the breather membrane. **Vario KM Duplex UV** climate membrane installed against the inner face of the rafters. Internal lining of Gyproc WallBoard.

Rafter Depth	Insulation Thickness (mm)	Ceiling Lining	Ceiling Membrane	U-value W/m ² .K
222mm	ISOVER Vario Batt (2x100mm)	Gyproc WallBoard	Vario KM Duplex UV	0.20



Insulating a loft conversion.

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Construction details



Due to wide and diverse range of existing roof constructions, it is not possible to show a comprehensive range of recommended systems in this brochure.

However, the inherent performance qualities of the VARIO system, which includes ISOVER glass wool insulation, are designed to be as effective in a loft conversion as in new build construction.

The VARIO system in loft upgrades will provide fire safety, acoustic performance and thermal comfort, resulting from a significant improvement in airtightness of the roof construction.

Additionally, the high recycled content of glass mineral wool insulation offers significant environmental benefits, whilst the insulant's physical characteristics provide installers with enhanced 'fitability'.

For further information contact the ISOVER Technical Support Team.
Tel: 0115 945 1143 email: isover.enquiries@saint-gobain.com.

OVER insulation with Vario KM Duplex UV

External Walls

Insulation: ISOVER Frame Batt 32/Frame Batt 34/Frame Batt 40 or Frame Roll 43

Building Regulations – Thermal:

England & Wales: SAP calculation will determine precise U-value for Part L 2006 compliance.

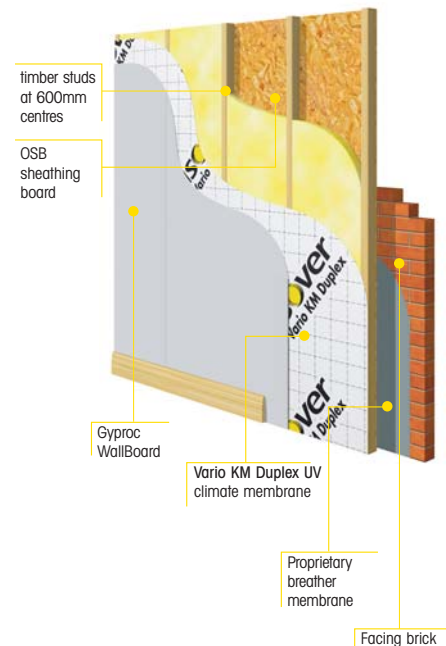
Scotland: Elemental Method U-value 0.25/0.22 (subject to primary heating package).

Timber Frame Wall Construction

Stud Size (mm)	ISOVER Product membrane in brickwork cavity	U-value (W/m ² K)	
		Conventional breather membrane in brickwork cavity	Reflective breather
90	90mm Frame Batt 32	0.38	0.33
140	140mm Frame Roll 43	0.31	0.28
140	140mm Frame Batt 40	0.30	0.27
140	140mm Frame Batt 34	0.28	0.25
140	140mm Frame Batt 32 (90mm + 50mm)	0.27	0.24

U-value calculation based on 15% timber fraction.

External wall consisting of facing brick and a nominal 50mm cavity with an OSB sheathing board fixed to the outside of timber studs at 600mm centres. Proprietary breather membrane (reflective grade optional) fixed to the OSB board in the brickwork cavity. Stud framework filled with ISOVER insulation. Vario KM Duplex UV climate membrane fixed to the inner face of the studs. Wall lining finish of Gyproc WallBoard.



Junction of external wall with party wall

Suggested 'T'-junction detail incorporating ISOVER Cavity Barriers and ISOVER Timber Frame products to provide compliance with Building Regulations thermal, acoustic and fire requirements in timber frame construction.

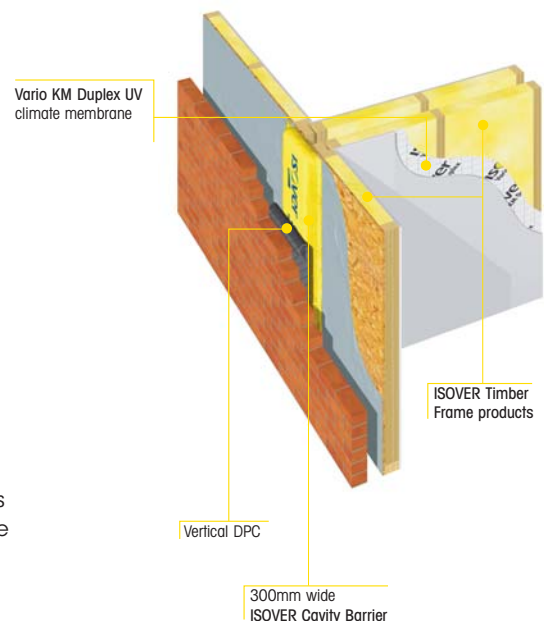
ISOVER timber frame products in a stud framework with ISOVER Cavity Barriers in the external wall cavity.

Meeting Building Regulations performance requirements

Thermal	Acoustic	Fire
External wall achieves U-values down to 0.24	Separating wall achieves minimum 45 dB (DnT,w+Ctr)	Meets national Building Regulations (up to 1 hour fire resistance)



ISOVER Cavity Barriers have been assessed by Chiltern International Fire laboratories as suitable for meeting the functional performance requirements (30 minutes and 60 minutes) at party wall cavity/external wall cavity T-junctions in timber frame construction. Substantiation: Chiltern Fire Test Report Reference Chilt/A05102



More information about any of the above systems contact the ISOVER Technical Support Team. Tel: 0151 945 1143 or email: isover.enquiries@saint-gobain.com

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