System INTELLO®

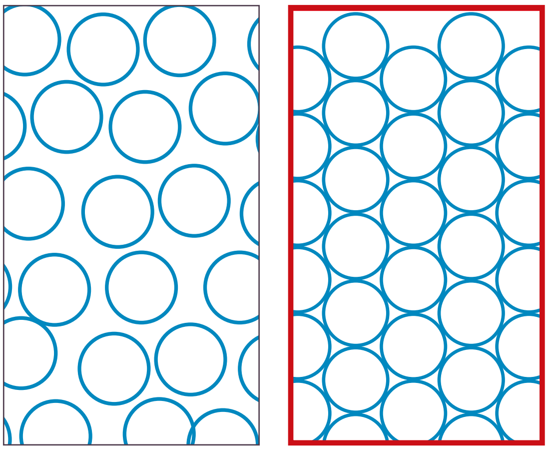
Maximum protection against structural damage and mould

High-performance system with the pro clima INTELLO intelligent vapour check and airtight membrane

pro clima®

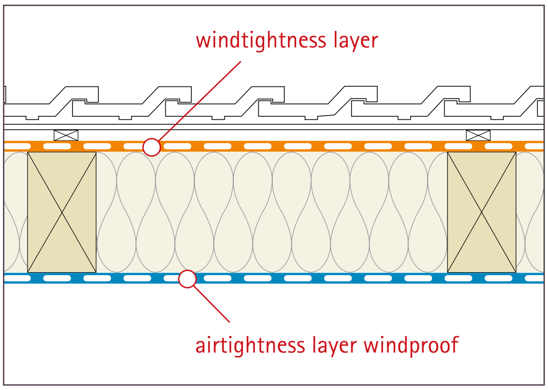
The ideal structure

Thermal insulation systems work on the basis of the inclusion of air in the insulation material (cellulose fibres, cork, wool and mineral fibres, other materials). These air pockets must be protected against air movements if the insulation is to have an insulating effect. For this reason, the insulating material should be sealed on all sides in the ideal insulating structure: i.e. airtight on the inside and windtight on the outside.



Insulation by stationary air

Left: Unprotected insulation material
Air movement in the porous structure reduces the insulating effect.
Right: Protected insulation material
No air movement possible in the porous structure, full insulation effect.
An example:
The thermal insulation effect of a woolen jumper is based on the stationary air inclusions in the fibres: as soon as a cold wind starts to blow, the insulation effect decreases. However, the effect is restored if you wear a thin wind-breaker, which itself has no significant heating function, over the jumper.



Airtight on the inside, windtight on the outside

For this reason, the insulation material is sealed on all sides in the ideal insulation structure:
outside with the windtightness layer, e.g. an underlay or facade membrane that is open to diffusion, and on the inside with an airtightness layer, e.g. a vapour retarder.

The windtightness stops cold outside air flowing through the insulation. The airtightness provides protection against the entry of humid indoor air and thus against condensation and mould.

Note

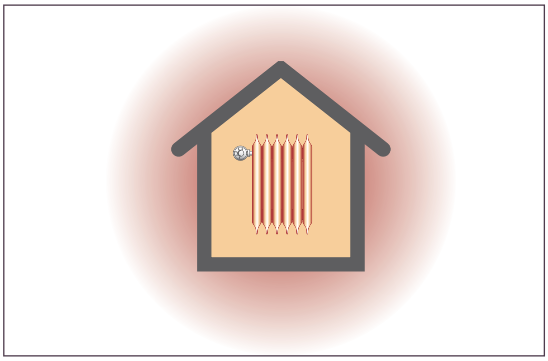
Faultless installation work is important when installing air sealing, as leaks in surfaces and at joints will have consequences.

Inadequate airtightness and its consequences

Financial + environmental / Heat losses / Global warming

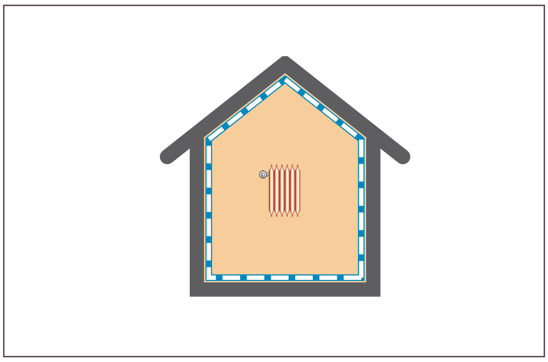
Building envelope unsealed: High heating costs and CO_2 emissions

Even very small leaks in the vapour retarder layer – such as those that arise due to faulty adhesion between membrane overlaps or joints – have far-reaching consequences. This type of weakness has the same effect as a continuous gap between the window frame and the walls – and of course nobody would tolerate such a gap! Accordingly, gaps in the vapour retarder should be given the same attention.



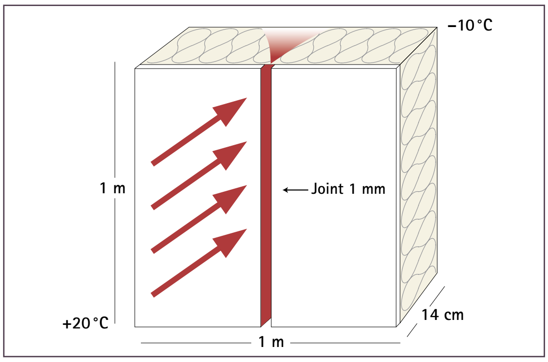
Sealed building envelope: Low costs and climate protection

The higher heating costs caused by faulty seals lead to reduced cost-effectiveness of the thermal insulation for the building owner. In addition, there are also higher emissions of CO_2 than would be necessary when heating an airtight building. A study by the Institute for Building Physics in Stuttgart has shown that the U-value of a thermal insulation structure is reduced by a factor of 4.8. When applied to a practical case, this means that the same amount of energy is required for heating a house with a living space of 80 m² where airtightness leaks are present as would be required for an airtight house with a floor area of approx. 400 m². Uncontrolled CO_2 emissions contribute to the greenhouse effect, and humankind is feeling the effects of this in the increasing number of environmental catastrophes, for example. For this reason, a reduction in CO_2 emissions is desirable. We can help the environment not only by reducing use, but also more importantly by implementing intelligent solutions.



Only a gap-free thermal insulation structure provides the full insulation value

According to a survey in the year 2000, buildings in Central Europe consume 22 l of oil/m² (220 kWh/m²) of living space for room heating on average; a passive house requires only 1 l, while a 3-litre house uses 3 l of oil/m², as the name suggests – assuming that the airtightness is perfect. Gaps in the airtightness layer of buildings lead to an increase in the energy requirement per square metre of living space.

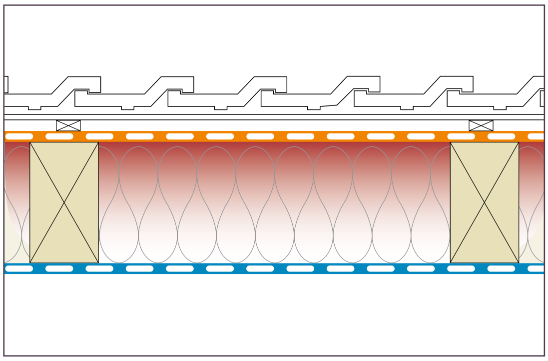


Unpleasant room climate in summer

Thermal insulation in summertime is characterised by the time in hours that it takes for the heat present underneath the roof covering to reach the inside of the structure (phase shift), and by the associated increase in the interior temperature in comparison with the exterior temperature (amplitude damping).

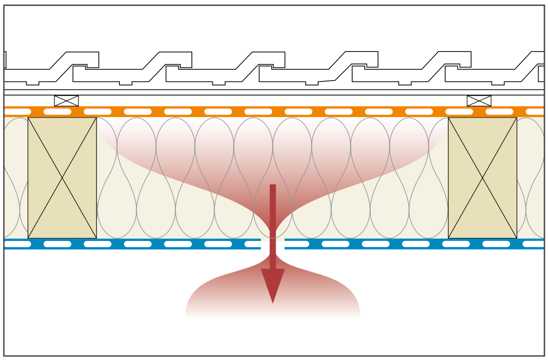
Cool rooms during summer heat

The phase shift and amplitude damping are calculated for heat protection in summer. An airtight thermal insulation structure that the heat has to work its way though pore-by-pore is assumed here.



Overheating up due to air flow

Gaps in the airtightness layer result in air flow from the outside to the inside and thus also in a high exchange of air as a result of the large difference in temperature and thus also in pressure. The thermal insulation can then no longer contribute to summer heat insulation and an unpleasant room climate that is too warm is the result.

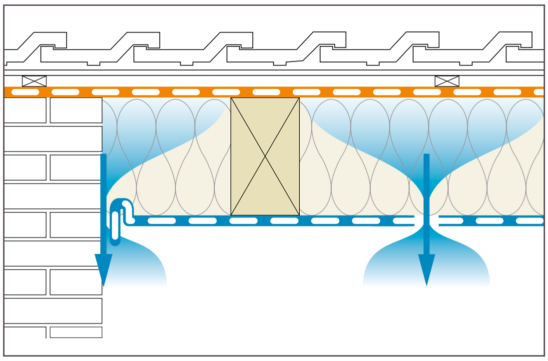


Unhealthy room climate in winter

The relative humidity in a home should be a comfortable 40–60% during the heating period. A room climate that is too dry is bad for our health.

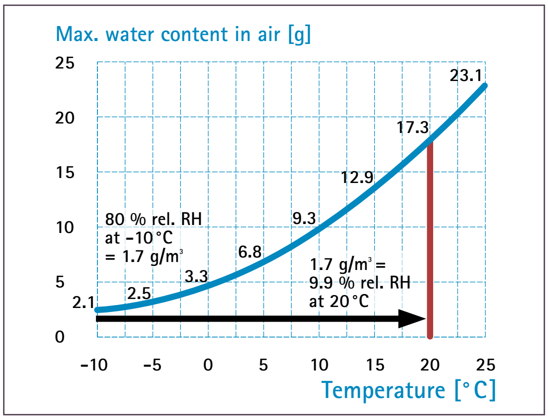
Dry cold air penetrates through gaps

The frequently observed phenomenon of dry indoor air in winter is a result of the fact that cold outdoor air enters into buildings through gaps. If this cold air is warmed up by heating, its relative humidity reduces.
For this reason, buildings with poor airtightness tend to have air that is too dry in winter, and this cannot be significantly improved by humidification equipment. The consequence is an unpleasant room climate.



Low relative humidity has a negative effect on health and comfort

Example: Cold air at 10 °C (50 °F) can hold a maximum of 1.7 g/m³ of humidity (standard outdoor winter climate as per DIN 4108-3) at a relative humidity of 80 %. If this air is heated to 20 °C (68 °F) (standard indoor winter climate), the relative humidity falls to 9.9 %.



Paths taken by moisture

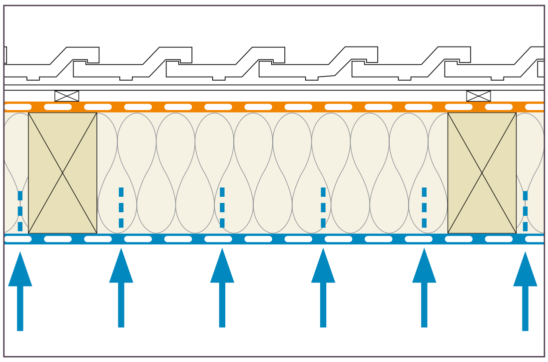
Thermal insulation structures have to be protected against the humidity loading from warm indoor air. This task is fulfilled by vapour retarder and airtight membranes.

Diffusion occurs in a planned manner

Note

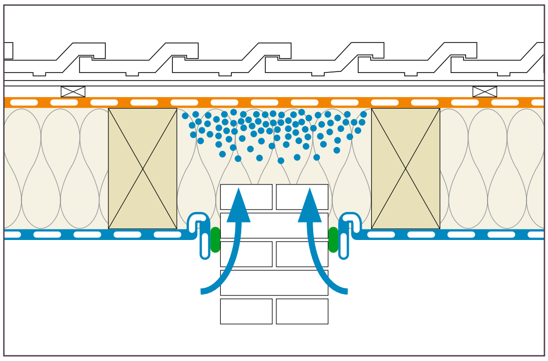
A vapour retarder with an s_d value of 2.3 m (g-value of 11.5 MNs/g) allows approx. 5 g of moisture per square metre to penetrate into the building structure each day in winter according to DIN 4108-3.

Diffusion:
Diffusion takes place due to the pressure difference between the inside and outside. The exchange does not occur through gaps, but instead in the form of moisture passing through a monolithic, airtight material layer. Diffusion is generally from the inside to the outside in winter and from the outside to the inside in summer. The entry of moisture into the structure depends on the diffusion resistance (s_d-/g-value) of the material. In Central Europe, the period with warm exterior temperatures is longer than the period with winter temperatures, which means that more moisture can dry out of the structure.

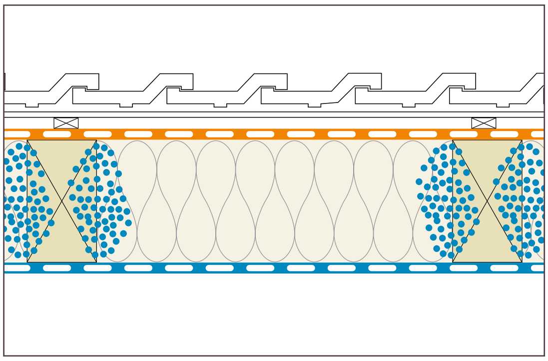


Unforeseen: Entry of moisture through adjacent components

Flank diffusion:
In this case, moisture enters into the thermal insulation through an adjacent component. This adjacent component is generally airtight, but has a lower s_d-/g-value than the vapour retarder.
A connecting masonry wall with a coating of airtight plaster would be an example here. If structures that are closed to diffusion on the outside have vapour retarders on the inside that allow little or no drying to the inside, there is a danger of an accumulation of moisture and of resulting structural damage in the case of airtight design.

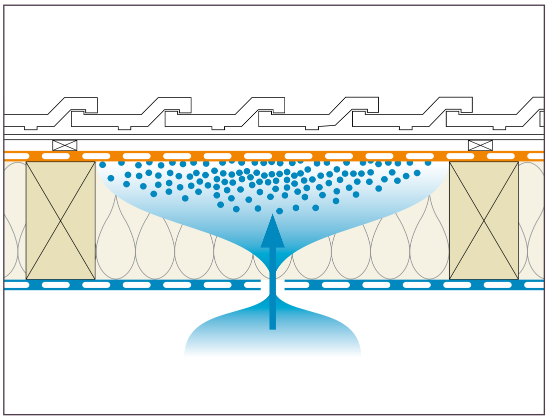


Unforeseen: Moisture from building materials



Moist construction materials:
Newly built structures often include a lot of water together with the building materials themselves. This example illustrates the amounts that can be involved: a roof with 6/22 rafters, e=70 cm and a wood density of 500 kg per cubic metre will have approx. 10 kg of wood per square metre; if this wood dries by just 1%, 100 g of water will be released per square metre, or 1000 g for 10% drying or 2000 g for 20%, and this water dries out of the rafters and can enter into other parts of the building structure.

Unforeseen: Air flow (Convection)

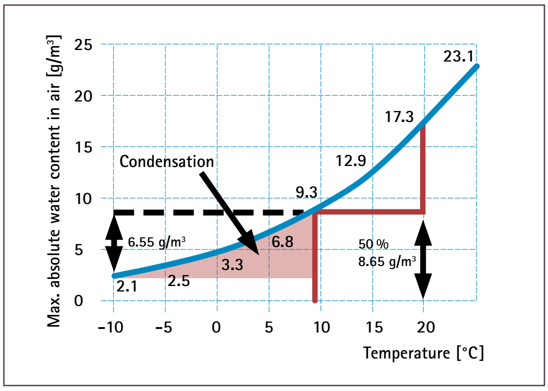


Convection:
A flowing movement of air is referred to as convection. This can occur in thermal insulation structures if there are gaps in the vapour retarder layer. The temperature difference between the interior and exterior climates also leads to a pressure difference, which the air flow attempts to balance out. Several hundred grams of moisture can enter the insulation due to convection in a single day and accumulate there in the form of condensation water.

Formation of condensation

Condensation formation at 50% relative humidity

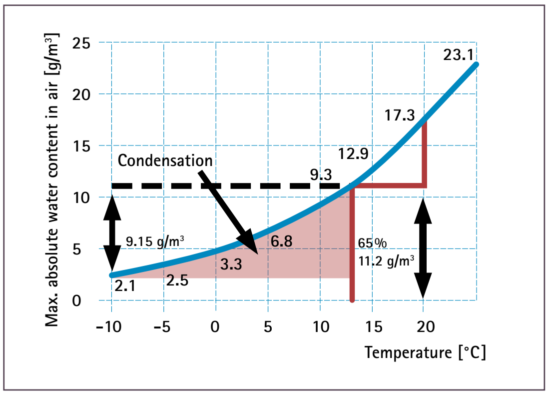
The physical behaviour of the air is responsible for the formation of condensation: warm air can hold more water than cold air.
The thermal insulation in wooden and steel structures separates warm indoor air with its high moisture content from cold outdoor air with its low absolute moisture content. If warm indoor air enters into a building component during the cold season, it will cool down on its path through the structure. Liquid water can then condense out of the water vapour contained in the air.



Under standard climate conditions (20 °C / 50% relative humidity), the dew point is reached at 9.2 °C. At -10 °C, the amount of condensate formed is 6.55 g/m³ of air.

Condensation formation at 65% relative humidity

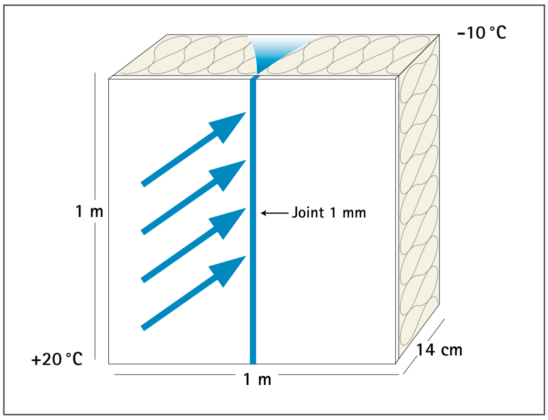
At higher relative humidity (e.g. new buildings with 65 %), the dew point temperature increases and, as a direct result, the amount of condensation increases too. Condensation occurs when a component layer that is more closed to diffusion is present below the the dew point temperature. From a building physics viewpoint, this means that component layers that are more closed to diffusion on the outside of the thermal insulation than the component layers on the inside are unfavourable. It is a major problem when warm air can enter the building component by convective flows, i.e. as a result of leaks in the airtight membrane.



The dew point is already reached at 13.2 °C at an increased room humidity of 65% r.h. At -10 °C, the amount of condensate formed is 9.15 g/m³ of air.

800 g of condensation through a 1 mm gap

An example:
0.5 g of water per square metre will diffuse into the building structure per standard winter day through a gap-free insulation structure with a vapour retarder with an s_d value of 30 m (or g-value of 150 MNs/g).
In the same period, 800 g of moisture per metre of gap length will flow into the structure by convection through a gap with a width of 1 mm in the vapour retarder. This corresponds to an increase by a factor of 1600.



Note

The humidity of air increases when it is cooled. When the temperature falls below the dew point, condensation will form. The dew point temperature increases at higher indoor air humidity. The result is that condensation forms earlier.

Mould due to condensation

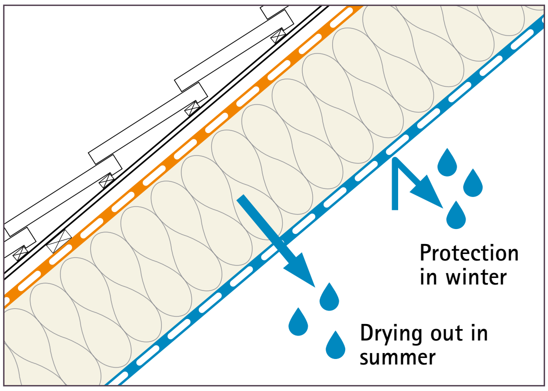
Structural damage due to mould formation may occur when humid, warm indoor air enters into the thermal insulation structure in winter – e.g. through gaps in the vapour retarder and airtightness layers – and large amounts of condensation are formed. Many mould fungi release poisons – such as MVOCs (microbial volatile organic compounds) – and spores as secondary metabolic products that are harmful to human health. These are a leading cause of allergies. Humans should avoid all contact with mould fungi. It is not important here whether the MVOCs or spores enter into the human body through food, i.e. through the stomach, or through the air into the lungs.

Conclusion

- ✔ Moisture can enter into a building structure in many different ways. It is impossible to prevent a certain level of moisture loading.
- ✔ However, if moisture levels are too high, structural damage can result.
- ✔ Vapour retarders are more reliable than vapour barriers. Vapour barriers with high diffusion resistances allow for barely any drying from the component to the inside and thus quickly become moisture traps.
- ✔ The decisive factor in keeping a building structure free of damage is the presence of significant drying reserves.

The best approach: Intelligent membranes

The best protection:
Vapour retarder membranes with a humidity-variable diffusion resistance provide the best protection against condensation water damage to building structures. They become more impermeable to diffusion in winter and protect the insulation against moisture penetration in an ideal manner. In summer, they can reduce their diffusion resistance very significantly and thus ensure the best possible drying-out conditions.



The INTELLO® system

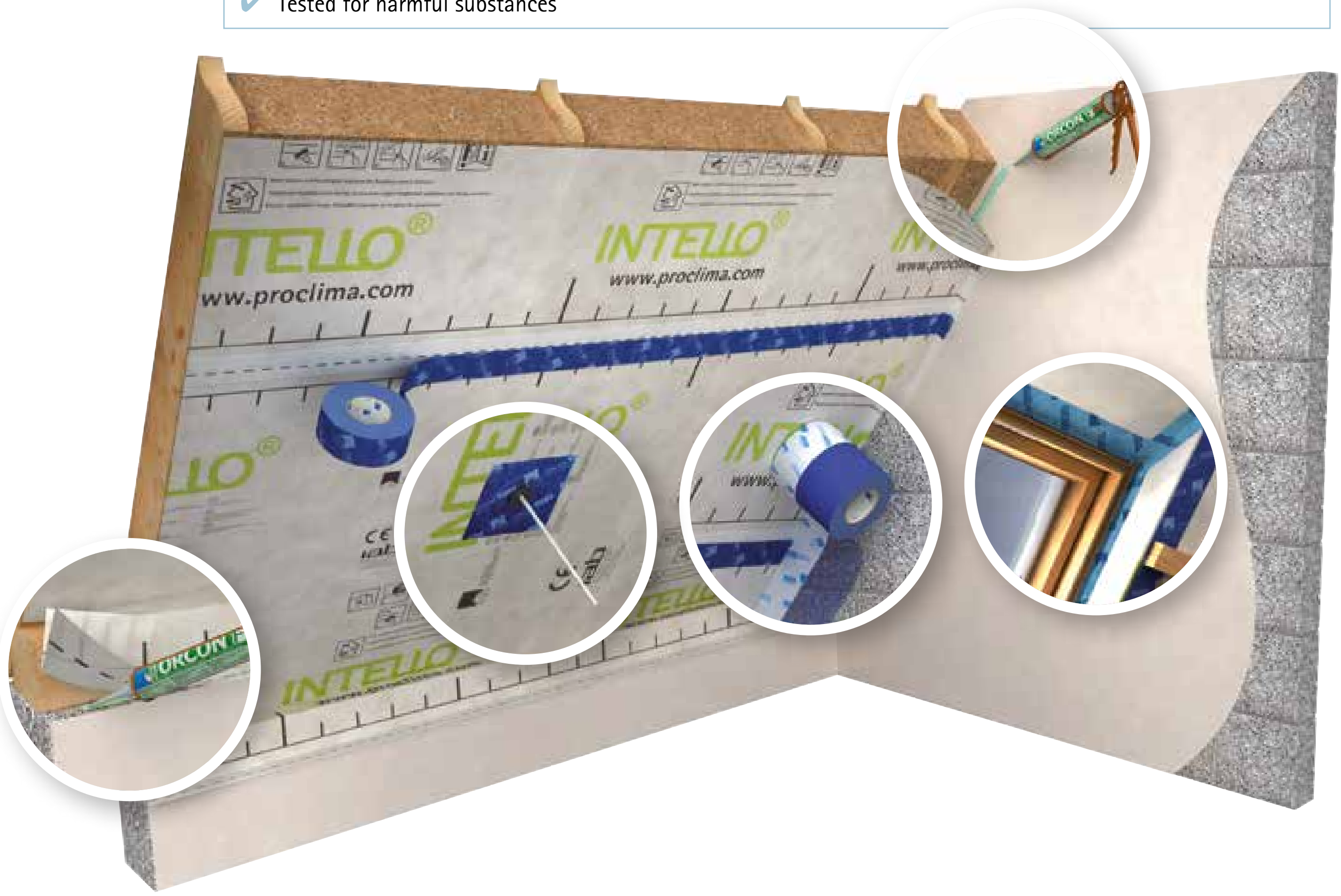
Humidity-variable vapour retarder and airtight membranes. The high-performance system from pro clima for maximum reliability – even on structures with demanding engineering conditions.

Advantages

- ✔ The best possible protection for insulation structures thanks to intelligent, humidity-variable diffusion adaptation with a variation of a factor of over 100: s_d-values from 0.25 m to over 25 m (g-value: 1.25 to over 125 MN·s/g)
- ✔ High degree of protection against condensation in winter, facilitates drying-out in summer: s_d-value down to 0.25 m (g-value: 1.25 MN·s/g)
- ✔ Can be combined with all fibrous insulation materials
- ✔ Easy to work with: dimensionally stable, no splitting or tear propagation
- ✔ Test winner in April 2012 with the German product-testing foundation »Stiftung Warentest«
- ✔ Tested for harmful substances

100X
humidity variable
s_d 0,25 - >25 m
g value 1,25 - >125 MNs/g

Made in Germany
developed and produced by pro clima



System core components

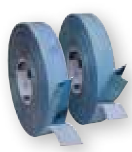
INTELLO / INTELLO PLUS
The innovation for maximum protection against structural damage

ORCON F
For bonding to adjacent components

TESCON VANA
For sticking membrane overlaps

100 YEARS ADHESION
✔ successfully tested
✔ unique worldwide
TESCON VANA I TESCON No.1 I UNI TAPE
www.proclima.com/100years

Supplementary products for detail solutions



TESCON PROFECT
For joints at windows, doors and corners

CONTEGA PV / CONTEGA SOLIDO SL
For reliable joints with subsurfaces that are to be plastered

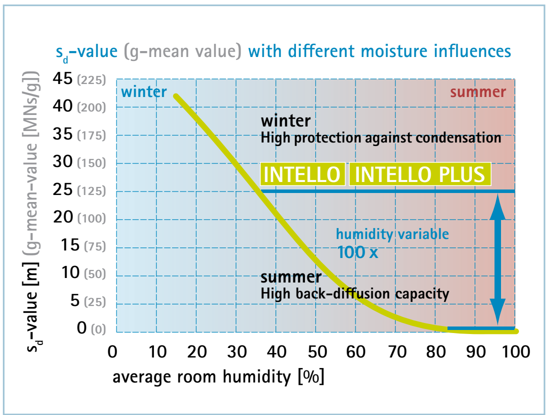
National technical approval by the DIBt

Official certification of safety, quality and suitability

- ✔ National technical approval by the DIBt
- ✔ Designs in accordance with standards for the construction principle of structures that are closed to diffusion on the outside in accordance with DIN 68800-2
- ✔ Flat roofs, metal roofs, green roofs, gravel roofs, diffusion-impermeable steep roofs
- ✔ Use class 0, without chemical wood preservation
- ✔ Reliable, independently monitored performance and quality

Humidity-variable airtight membranes with **DIBt approval** for **designs in accordance with standards** for structures that are closed to diffusion on the outside **in accordance with DIN 68800-2**

Maximal protection against structural damage and mould

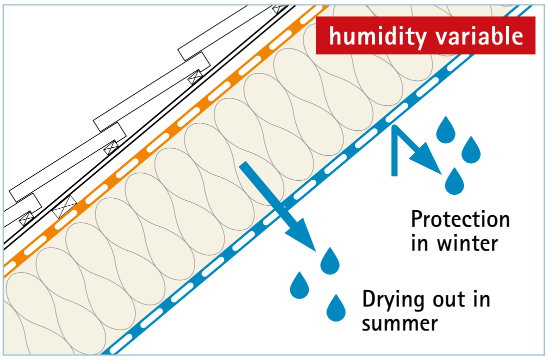


A tried-and-tested principle

INTELLO work on the principle of climate-controlled membranes: the fleece membranes provide a seal against moisture in winter, whereas the molecular structure becomes more open in summer and facilitates drying out in a reliable manner. The variability of the diffusion resistance of the high-performance INTELLO systems guarantees
impressive protection against structural damage, even on demanding structures that are impermeable to diffusion to the outside such as steep roofs with sheet metal covering, roof linings with asphalt roof membranes, flat roofs and green roofs. This also holds for locations with very cold climates.

Seasonal intelligence

In winter, INTELLO reduce or stop the penetration of moisture into roofs and walls with their s_d value of over 25 m (or g-value > 125 MNs/g) (moisture transport of less than 7 g/m² per week). In summer, the vapour retarders allow water vapour to escape. The s_d value of 0.25 m (or g-value of 1.25 MNs/g) corresponds to moisture transport of over 500 g/m² per week – which represents an exceptional drying-out capacity! Low moisture transport in winter – high degree of drying in summer: unforeseen moisture can dry out of the insulation over and over again, meaning that mould has no chance to form!
This intelligent diffusion adaptation behaviour is designed to be particularly powerful and adheres to pro clima's reliability philosophy: to achieve the best possible protection against structural damage, the drying reserve must be greater than the largest theoretically possible moisture loading!



More information

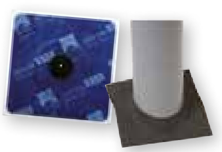
Study
Detailed information on the building physics of thermal insulation can be found in the study »Calculating Potential Freedom from Structural Damage of Thermal Insulation structure in Timber-Built Systems«.

Web
www.proclima.com

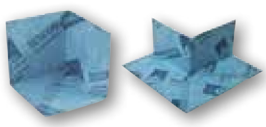
Movie
INTELLO function:

CONTEGA IQ
For joints at windows and doors, retarding on the inside and open to diffusion on the outside

TESCON PRIMER RP
For quick and easy application of primer



KAFLEX/ROFLEX
Seal grommets for cable and pipe feed-throughs



TESCON INCAV and INVEX
Self-adhesive 3D shaped elements for interior and exterior corners

INSTAABOX
For airtight installation of sockets and switches

Planning and construction guidelines

Area of application

The vapour retarding and airtightness membranes INTELLO and INTELLO PLUS can be used as an inner boundary for thermal insulation:

- In roofs, walls, ceilings, and floors
- In residential and commercial buildings with temporary increased levels of humidity
- In residential buildings or buildings with residential-like use in all rooms such as living rooms and bedrooms, kitchens and bathrooms
- In external permeable and external impermeable structures
- In the event of high indoor air quality requirements

Application in complex or demanding structures

By global standards, the INTELLO PLUS system also offers a particularly high level of potential freedom from structural damage for critical structures that are externally impermeable such as pitched roofs having a metal covering and sub-roofs made from bitumen roof sheeting, for flat roofs, green roofs etc. – even in locations with an extremely cold climate.
Detailed information on the physics of thermal insulation is given in the study »Calculating potential freedom from structural damage of thermal insulation structure in timber-built systems«.

Use of fibrous insulation materials

The high degree of protection against structural damage offered by humidity-variable vapour retarders is achieved by using fibrous thermal insulation materials that are open to diffusion, as the moisture must be able to diffuse through to the vapour retarder for the purpose of drying during the summer climate. Fibrous thermal insulation materials such as cellulose, flax, hemp, wood fibre and rock or mineral wool are ideal here.

Can also be used for diffusion-impermeable roof linings

The pro clima INTELLO system can be used with all commonly available diffusion-permeable underlays and diffusion-impermeable roof linings. Underlays made of wood fibreboards are advantageous from an energy viewpoint.
According to DIN 68800-2, chemical wood preservation is not required if the upper covering of a building structure has an s_d-value ≤ 0.3 m (or g-value ≤ 1.50 MN·s/g).
This statement also applies for installation on dry solid-wood planking. In these components, there is no need to use chemical wood preservation in combination with the highly diffusion-permeable SOLITEX membranes.

Note for DIY enthusiasts

Install the vapour retarder together with the thermal insulation. If the thermal insulation is left without a vapour retarder for a long period in winter, there is a risk of condensation formation.

Reliable protection with open interior cladding

For humidity-variable vapour retarders to be fully effective, there should be no diffusion-retarding layers such as OSB or plywood panels on the inside of the thermal insulation. Cladding such as plasterboard or wooden boards is suitable here.
If no interior cladding is planned, the membrane must be protected against the long-term effects of sunlight. In areas such as under the roof pitch,pro clima INTESANA can be used as an alternative on surfaces that are not exposed to direct sunlight if no other interior cladding is foreseen. This product has increased UV protection and offers a high level of protection against mechanical damage.

Correct work process provides protection against condensation

The ideal time for installation is two weeks after the adjacent walls have been plastered. Check the moisture content of the wooden structure before insulating and sealing. Alternatively, installation is also possible before plastering is carried out.
To avoid condensation formation, the vapour retarder and airtightness layer should then be completed immediately after the installation of mat or panel-shaped insulation materials.
Blown-in insulation should be inserted immediately after airtight sticking of the membrane. If necessary, carry out this work gradually in steps. This applies particularly to work carried out in winter. Ventilate any increased relative humidity quickly and systematically.

Moisture due to normal use

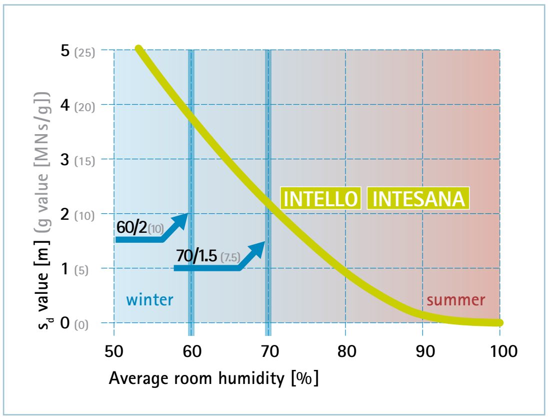
The diffusion resistance of INTELLO has been chosen to ensure that there is a reliable vapour-retarding effect even in the case of high indoor humidity, which can occur in new buildings as a result of construction work or during short-term increases in relative humidity in bathrooms or kitchens, for example. As a rule, moisture due to construction work must be able to escape the building quickly by ventilation through open windows. Dehumidifiers can help to speed up the drying process in wintertime. This helps to avoid permanently high levels of relative humidity.

The 60/2 rule (60/10 rule)

There is increased humidity in new buildings, kitchens and bathrooms. The diffusion resistance of a vapour retarder should be selected in such a way that a:

- diffusion resistance (s_d-value) of at least 2 m or (g-value) of at least 10 MN·s/g

is achieved even at 60 % average relative humidity. The structure will then be sufficiently protected against the entry of moisture from the indoor air and against mould formation.
INTELLO and INTELLO PLUS have a s_d-value of approx. 4 m, and a g-value of approx. 20 MN·s/g.



The 70/1.5 rule (70/7.5 rule)

There is very high humidity in buildings during the construction phase when walls are being plastered or screed is being laid. The diffusion resistance of a vapour retarder should be greater than 1.5 m (s_d-value) or 7.5 MN·s/g (g-value) at 70 % average relative humidity in order to protect the structure against excess entry of moisture from the building site climate and against mould formation. A high degree of protection against moisture is particularly necessary when there are wood-based panels on the outside of the building structure.
INTELLO and INTELLO PLUS have an s_d-value of 2 m and an g-value of 10 MN·s/g at 70 % relative humidity.

Quality assurance

Airtightness is the critical factor in protecting the thermal insulation structure against damage. pro clima recommends that the airtightness layer be checked for leaks and that any leaks be located and rectified using pro clima WINCON or a blower door test, for example.

Approval

The current version of DIN 68800-2 demands – under »Construction principles for external building components fulfilling the conditions of use class GK 0« (refer to DIN 68800-2, clause 7) – certification of technical approval for humidity-variable diffusion-retarding layers that are used on the interior.
pro clima INTELLO / INTELLO PLUS have the required national technical approval (approval number Z-9.1-853) from the German Institute of Construction Engineering (DIBt); as a result, these products may be used on structures that are open to diffusion on the exterior and also on building components that have component layers that are closed to diffusion on the exterior, such as metal coverings or seal membranes on decking. These components can thus be implemented – as prescribed – without additional chemical wood preservation. In addition, the durability of the humidity-variable behaviour is confirmed independently by means of the accelerated aging tests that are carried out.

Approval and composition

The high-performance INTELLO and INTELLO PLUS vapour retarders consist 100% of polyolefins – the special membrane is made of a polyethylene copolymer, the fleece and reinforcement are made of polypropylene. This facilitates easy recycling. The membranes have been tested for emissions according to the AgBB evaluation scheme. The pro clima INTELLO and INTELLO PLUS vapour retarder membranes have been tested in accordance with the specifications of EN 13984. They have the CE label and the BBA and NSAI certification.

Technical hotline

If you have questions on applications, please contact: https://proclima.com/service/technical-support

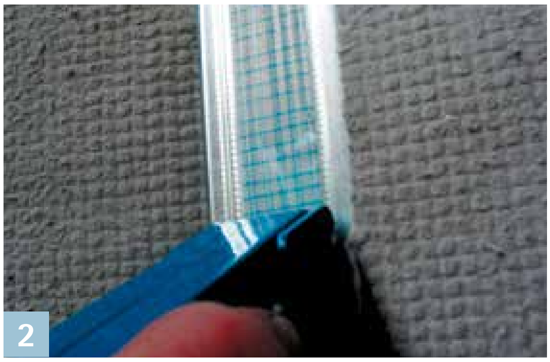
Installation instructions

Note: Blown-in insulation

Insert insulation material immediately after completion of the airtightness layer with INTELLO / INTELLO PLUS. Max. distance of 5-10 cm between staples when using blown-in insulation materials

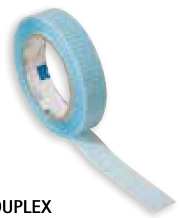
Installing membranes

Roll out the membrane and fasten it using galvanised staples with a width of at least 10 mm and a length of 8 mm at intervals of 10-15 cm (5-10 cm for blown-in insulation). Install the membrane to stop approx. 4 cm short of adjacent building components so that an airtight bond can be applied here subsequently.

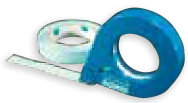


Fastening to stud wall frame members

Fastening of membranes to metal frame members on stud wall and ceiling structures using pro clima DUPLEX



DUPLEX
Double-sided adhesive tape for sticking membrane end joints and other joints



DUPLEX manual dispenser
For quick application of pro clima DUPLEX (roll 20 metres in length). Roll out, press into place and tear off in a single working step.

Overlapping the membranes

Allow for an overlap of approx. 10 cm between the membranes. The marking that is printed onto the memb-rane will serve as a guide here.

Cleaning the subsurface

Clean the subsurface (dry and free of dust, silicone and grease) and carry out an adhesion test, if necessary.

TESCON VANA
System adhesive tapes for sticking membrane overlaps

Sticking the overlaps

Centre the TESCON VANA system adhesive tape on the overlap and gradually stick it in place, ensuring that there are no folds or tension.

Rubbing the adhesive joint firmly

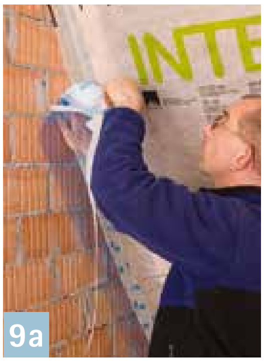
Rub the tape firmly using PRESSFIX, taking care to ensure that there is sufficient resistance pressure.

Sealing to smooth, non-mineral subsurfaces ...

... (e.g. knee walls made of wood-based panels) should also be implemented using TESCON VANA system adhesive tape. Centre the tape and gradually stick it in place, ensuring that there are no folds or tension.

Sealing to rough or mineral subsurfaces

Clean the subsurface. Apply a line of ORCON F system adhesive of at least d = 5 mm, or more in the case of very rough subsurfaces if necessary. Place INTELLO onto the adhesive bed, leaving slack to allow for expansion. Do not press the adhesive completely flat.



Sealing to unplastered subsurfaces

Stick the CONTEGA PV plaster sealing tape onto INTELLO using self-adhesive strips. Ensure the tape remains in place by using ORCON F at discrete points. First plaster behind the tape, then apply the tape to the wet plaster and plaster over it fully.

Masonry gable end wall, creating an airtight joint

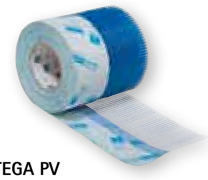
Put the vapour retarder in place. Leave slack for expansion so as to allow for relative motion between components. Remove all release films from CONTEGA SOLIDO SL. Put the tape in place, gradually stick it, and then rub using the pro clima PRESSFIX application tool to secure it.

Sealing to roughly sawn timber

Clean the subsurface. Apply a line of ORCON F system adhesive of at least d = 5 mm, or more in the case of very rough subsurfaces if necessary. As an alternative, a roll of ORCON LINE joint adhesive can be used.

Place INTELLO onto the adhesive bed, leaving slack to allow for expansion. Do not press the adhesive completely flat.

ORCON F
System adhesive for bonding to adjacent components



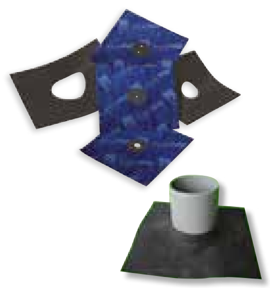
CONTEGA PV
Plaster sealing tape for defined, permanent, reliable joints with subsurfaces that are to be plastered

CONTEGA SOLIDO SL
Full-surface adhesive sealing tape for interior use that can be plastered over, with vapour-retarding properties

Note on installation

Movie
INTELLO function:

Installation instructions continued



KAFLEX/ROFLEX
Seal grommets for cable and pipe feed-throughs

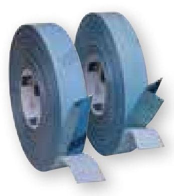
12a

Sealing to plastered chimney (insulated or double-shelled)

Seal INTELLO using ORCON F as shown in Figure 8.

12b

Then cut into short pieces of TESCON VANA as far as the centre, create corner shapes and then stick in place.

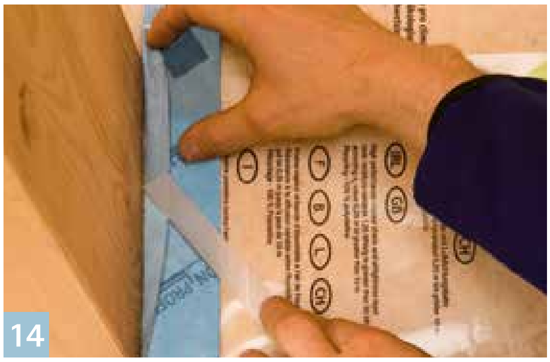


TESCON PROFECT
For joints at windows, doors and corners

13

Joints to pipes and cables

Place a KAFLEX or ROFLEX sealing grommet over the cable or pipe and stick to INTELLO. The cable grommets are self-adhesive. Stick the pipe grommets to the memb-rane using TESCON VANA.



14

Corner bonding

Guide TESCON PROFECT prefolded corner sealing tape into the corner on the release film and stick the first independent adhesive strip. Then remove the release film and stick the second independent adhesive strip.

Note: Blown-in insulation

In the case of blown-in insulation and insulation materials with a tendency to sag significantly, an additional supporting batten should be fitted over the membrane overlaps.

15

Battens, interior cladding

Install battens (e= 50 cm) to bear the weight of the insulation, and install interior cladding to provide pro-tection against UV light and other damage.

16

Quality assurance

It is recommended that airtightness should be checked using WINCON or a blower door test.

Installation and fastening

Where possible, INTELLO and INTELLO PLUS are installed in such a way that adhesion can be carried out using single-sided adhesive tape on the smooth (printed) side of the sheeting. They can be installed taut and without slack either in parallel with or perpendicular to the supporting structure, e.g. the rafters. In the case of horizontal installation (perpendicular to the supporting structure), the separation distance of the supporting structure is limited to a maximum of 100 cm. After installation, perpendicular battens on the inside at a separation distance of a maximum of 50 cm must be fitted to carry the weight of the insulation material. If regular tensile loads on adhesive tape bonds are to be expected – for example, due to the weight of the insulation material – when using mat or panel-shaped insulation materials, an additional supporting batten should be fitted over the overlap bonding.
When attaching the membranes in the case of mat or panel-shaped insulation materials, a maximum separation distance of 10 to 15 cm applies for the fastening staples, which must be at least 10 mm wide and 8 mm long. The overlaps between the membrane strips must be approx. 8 to 10 cm.
Airtight seals can only be achieved on vapour control membranes that have been laid without folds or creases.
Ventilate regularly to prevent excessive humidity (e.g. during the construction phase). Occasional rush/inrush ventilation is not adequate to quickly evacuate large amounts of construction-related humidity from the building. Use a dryer if necessary.
To prevent condensation, INTELLO should be stuck down so that it is airtight immediately after installing the thermal insulation. This particularly applies when working in winter.

Additional instructions for blown-in insulation materials

INTELLO PLUS can also be used as a boundary layer for blown-in insulation materials of all types. A reinforcement structure ensures that there is little expansion during the blowing-in process. Installation in parallel with the supporting structure has the advantage that the joint will be on a solid base and is protected by this base.
The separation distance between the staples used to fasten the membrane strips must be a maximum of 2 to 4". If installation is carried out perpendicular to the supporting structure, a supporting batten should be fitted directly over the membrane strip overlap with its airtight bonding in order to avoid tensile loading on the adhesive bond.
Alternatively, the adhesive tape on the overlap can be strengthened with additional, perpendicular strips of adhesive tape every 12".
When working in cold outdoor climates, the blown-in insulation material should be inserted immediately after installation of INTELLO PLUS. This will protect the membrane against condensation formation.

Note on installation

Movie
INTELLO function:

WINCON
Quality assurance

The pro clima quality assurance system for quick and easy testing of the airtightness layer.

The WINCON test fan is built into a door or window. The resulting vacuum in the building aids the detection of leaks.

Advantages

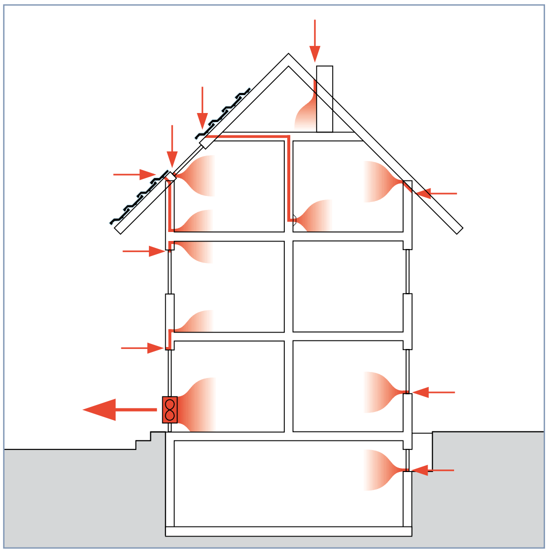
- ✔ Quick and easy quality control of the airtightness layer
- ✔ High fan capacity, large volumes can also be tested reliably
- ✔ Ideal preventative measure against recourse claims and hidden faults thanks to partial acceptance of the airtightness work

Testing of work carried out has formed part of the construction process for many trades for some time now. Sanitation and heating installation technicians routinely test their water or gas pipe connections before these are put into service. After all, any damage that could occur later will generally be significant, as faults cannot be seen or accessed once plastered over.
Refurbishment costs for structural damage caused by faulty airtightness generally exceed the cost of constructing the building component itself by a factor of 10 to 100. It is thus always recommended to test the quality of work carried out to rule out the possibility of hidden faults being present. Testing using the pressure difference procedure is almost always very easy and feasible from a cost viewpoint.

Better reliability thanks to quality control

Testing in a quick and cost-effective manner

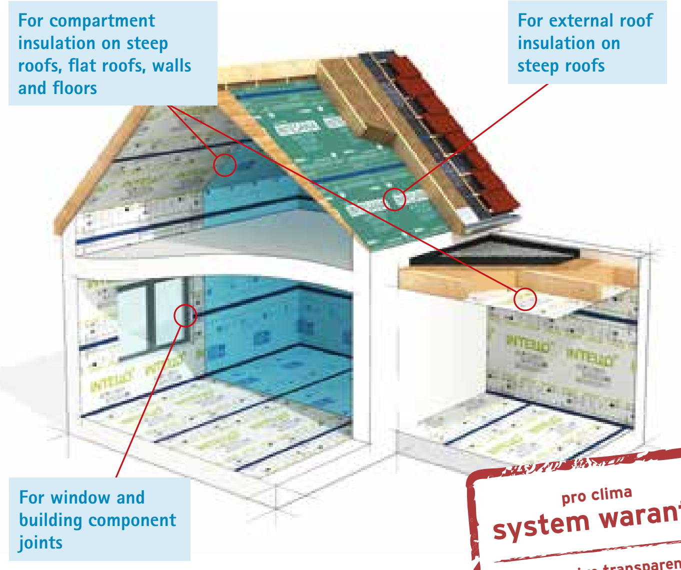
A fan can remove all doubts!
A fan is built into a door or window and creates a »mini-vacuum« of 50 Pa in the building. Air will then flow in through any leaks in the airtight layer. This flow can clearly be felt with the back of the hand or made visible using air flow testing devices (smoke tubes).
pro clima WINCON is a testing device with an exceptionally high fan capacity (9800 m^3/h at a pressure difference of 50 Pa). This can also be used to test spaces with large volumes.
Ideally, this test will be carried out before the inner cladding is fitted, as leaks can be rectified during testing in this case.



pro clima WINCON sucks the air out of the building.
Air will flow in at weak points.

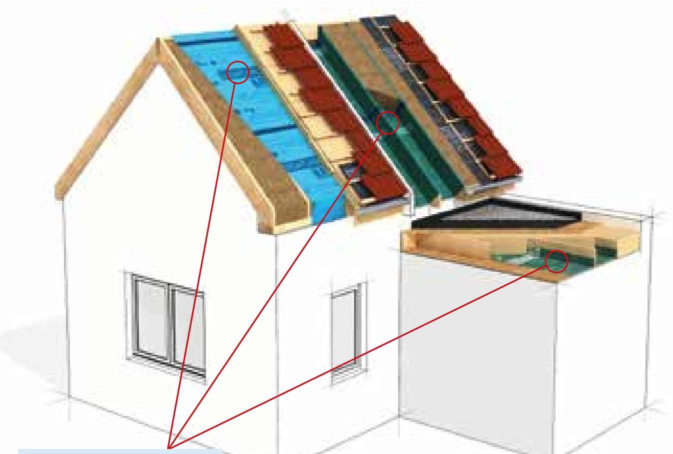
Additional system solutions for sealing the building envelope

Interior air sealing for new buildings

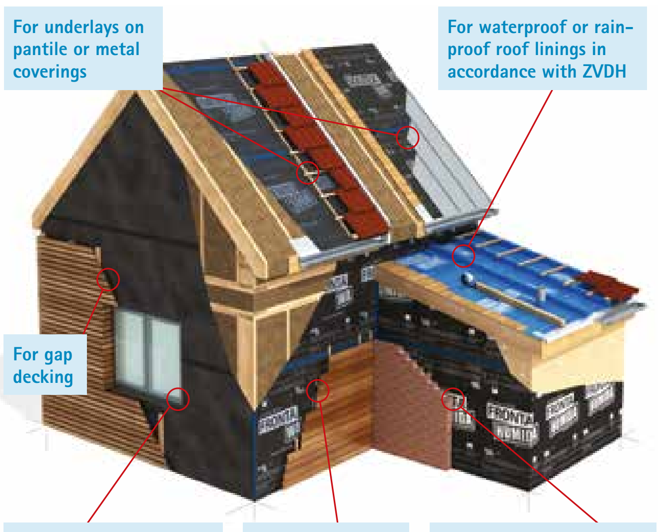


pro clima
system waranty
comprehensive transparent fair
www.proclima.com/service/system-warranty

Interior air sealing for refurbishment projects



Exterior wind sealing for roofs and walls



Secure bonding and detail solutions

- All-round adhesive tapes and joint adhesives for interior and exterior use
- Plaster sealing tapes
- Sealing grommets

You can also visit pro clima online!

Further information and background information at

www.proclima.com

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