

NSAI

Agrément

IRISH AGRÉMENT BOARD CERTIFICATE NO. 07/0297

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pro clima Intelligent Airtight System

Système intelligent d'étanchéité à l'air
Intelligentes Luftdichtungssystem

NSAI Agrément (Irish Agrément Board) is designated by Government to issue European Technical Approvals.

NSAI Agrément Certificates establish proof that the certified products are '**proper materials**' suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2014**.



PRODUCT DESCRIPTION:

This Certificate relates to the pro clima Intelligent Airtight System which consists of a range of intelligent vapour checks (INTELLO, INTELLO PLUS and DB+), tapes, adhesives, and the Wincon airtightness quality control fan. This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2014.

USE:

Airtightness is the control of air leakage, i.e. the elimination of unwanted draughts through the fabric of the building envelope through the correct and proper installation of a vapour check or vapour barrier. Consequently condensation, mould, rot, damp and structural damage are also eliminated, ensuring a more viable structure, an insulation layer that can perform properly as it is now protected against penetrating moisture, reducing the amount of energy-in-use in the building and CO₂ emissions.

The airtightness layer prevents uncontrolled air infiltration, i.e. air convection, while air exchange from inside to outside by ventilation still occurs. The quality of airtightness is determined by the freedom from leakages in the building envelope, i.e. the more leakages there are in the inner building envelope such as the vapour check, the poorer the airtightness. Interior air flowing to the outside through leaks in the vapour check transports heat and consequently leads to a higher heating energy demand. As it flows through the thermal insulation, the warm air cools and condenses on the exterior building elements. This precipitating moisture in the structure, referred to as condensation, leads to mould formation which may remain undetected for a considerable period of time and can lead to structural damage.

Readers are advised to check that this Certificate has not been withdrawn or superseded by a later issue by contacting NSAI Agrément, NSAI, Santry, Dublin 9 or online at www.nsai.ie

Mould occurs not only when the actual temperature drops below the dew point, i.e. when condensation precipitates, but also if the relative humidity lies above 80% for extended periods of time within building elements. Reduction in surface temperatures of building elements can be caused by thermal bridges or by defective airtightness. The colder it is outside, the more the building elements will cool. A damp room climate leads to a higher dew point temperature and mould limit temperature and therefore acceleration in mould growth.

The dry air that is often found in rooms in wintertime is due to cold outside air coming into the house through gaps in the structure. As this cool air heats, its relative humidity drops, resulting in uncomfortable dry air. In summertime, gaps in the airproofing layer allow high levels of air exchange between the building and the external environment due to the high temperature difference and the resulting pressure difference. This means that the insulation is no longer able to contribute effectively to protecting the occupants of the building from the summer heat.

Air permeability can be measured by means of pressure testing of a building prior to completion, in accordance with IS EN 13829:2000 *Thermal performance of buildings – Determination of air permeability of buildings – Fan pressurization method*, where performance is measured in terms of cubic metres per square metre of external surface area per hour ($\text{m}^3/(\text{hr} \cdot \text{m}^2)$) at 50 Pascals pressure difference.

MANUFACTURE AND MARKETING:

The product is manufactured on behalf of:
 Moll bauökologische Produkte GmbH,
 "pro clima",
 Rheintalstr. 35-43,
 68723 Schwetzingen,
 Germany.

The product is marketed by:
 Ecological Building Systems,
 Main Street,
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1.1 ASSESSMENT

In the opinion of NSAI Agrément, the pro clima Intelligent Airtight System if used in accordance with this Certificate can meet the requirements of the Building Regulations 1997 to 2014, as indicated in Section 1.2 of this NSAI Agrément Certificate.

1.2 BUILDING REGULATIONS 1997 to 2014

REQUIREMENT:

Part D – Materials and Workmanship

D3 – The pro clima Intelligent Airtight System, as certified in this NSAI Agrément Certificate, is comprised of 'proper materials' fit for their intended use (see Part 4 of this Certificate).

D1 – The pro clima Intelligent Airtight System, as certified in this Certificate, meets the requirements of the building regulations for workmanship.

Part B – Fire Safety

B2 – Internal Fire Spread (Linings)

The pro clima Intelligent Airtight System installed in accordance with this Certificate may be used on the internal surfaces of buildings to meet this requirement.

B3 – Internal Fire Spread (Structure)

The pro clima Intelligent Airtight System installed in accordance with this Certificate will not adversely affect the control of fire and smoke within concealed spaces in the structure or fabric of a properly designed building.

Part C – Site Preparation and Resistance to Moisture **C3 – Dangerous Substances**

As is the case for non-airtight buildings, the ground floor of buildings incorporating the pro clima Intelligent Airtight System must include a radon sump and be provided with a facility for extracting radon. In areas where protection from dangerous substances is required, an approved gas resistant membrane and gas handling system must be provided under the ground floor.

C4 – Resistance to Weather and Ground Moisture

As the three membranes in the pro clima Intelligent Airtight System are for internal use only, the product will not be exposed to external weather conditions. The membranes will not be damaged by moisture from the ground or carry moisture from the ground to any part of the building which would be damaged by it.

Part F – Ventilation

F1 – Means of Ventilation

Air leakage can provide background ventilation, however this is uncontrolled ventilation and can cause discomfort to occupants as well as potential structural damage. Airtightness should form part of a balanced package of insulation and ventilation measures. The pro clima Intelligent Airtight System in conjunction with trickle vents, passive ventilation and mechanical ventilation systems, can minimise background air leakage (uncontrollable ventilation) and provide controllable ventilation through use of trickle vents etc.

Part L – Conservation of Fuel and Energy

L1 – Conservation of Fuel and Energy

The pro clima Intelligent Airtight System, when installed and used in accordance with this Certificate, can meet this requirement and contribute to less air leakage in the

building and therefore less heat loss. A key parameter for achieving an efficient Building Energy Rating (BER) is that the building envelope is designed and insulated to a high level and the fabric airtightness is to a high standard.

Part Two / Technical Specification and Control Data

2

Characteristic		Test method	INTELLO PLUS		INTELLO		DB+	
Thickness* (mm)		EN 1849-2:2001	0.2 ± 0.05 mm		0.2 ± 0.05 mm		0.23 ± 0.1 mm	
Roll Width ^{1*} (m)		EN 1848-2	1.5 or 3.0		1.5 or 3.0		1.05, 1.35, 1.7, 2.75 (50) 0.75, 0.9, 1.05, 1.35 (100)	
Roll Length ^{2*} (m)		EN 1848-2	20 or 50 (1.5), 50 (3.0)		20 or 50 (1.5), 50 (3.0)		50 or 100	
Surface weight*		EN 1849-2:2001	110 ± 5 g/m ²		85 ± 5 g/m ²		190 ± 5 g/m ²	
Membrane			Polyethylene copolymer		Polyethylene copolymer		Kraftpaper, Polyethylene (non-halogen)	
Fleece			Polypropylene		Polypropylene		-	
Reinforcement			Polypropylene		-		Fibreglass Mesh	
Fire Rating*		EN 13501-1	E		E		E	
Tensile strength* MD/CD (N/50mm)		EN 12311-2 ³ EN 13859-1:2005 ⁴	350	290	130	105	550	420
Elongation* MD/CD		EN 13859-1:2005	15 %	15%	90 %	90 %	5 %	5 %
Nail tear resistance* MD/CD		EN 12310-1 ³ EN 13859-1:2005 ⁴	200N	200 N	70 N	70 N	70 N	70 N
Artificial ageing by long term*		EN 1296:2001 EN 1931:2001	Passed		Passed		Passed	
Water Vapour Transmission Resistance	Sd*	EN ISO 12572	7.5 ± 0.25 m		7.5 ± 0.25 m		2.3 ± 0.25 m	
	Permeance		>13.2 to <0.33 US perms		>13.2 to < 0.33 US perms		5.4 to 0.82 US perms	
	MVTR	EN ISO 12572	<1.28 to > 51 MNs/g		<1.28 to > 51 MNs/g		3.06 to 20.4 MNs/g	
	g-value*	EN 1931 :2001	37.50 ± 1.25 MNs/g		37.50 ± 1.25 MNs/g		11.5 ± 1.25 MNs/g	

*Refer to Clause 3.6 of this certificate
¹ dimensional tolerances +0.005m
² dimensional tolerances +0.5m
³ unreinforced sheets
⁴ reinforced sheets

Table 1: Product Specification

2.1 PRODUCT DESCRIPTION

The pro clima Intelligent Airtight System is comprised of a range of three intelligent vapour checks, and ancillary items including various adhesive and tapes, and the WINCON airtightness quality control fan. The glue used for all of the tapes and adhesives in the pro clima Intelligent Airtight System is waterproof. The product specification of the three intelligent vapour checks is shown in Table 1.

DB+ is a cellulose vapour check, while INTELLO and INTELLO PLUS are polyethylene copolymer membranes with INTELLO PLUS containing a polypropylene reinforcement layer. All three pro clima intelligent vapour checks have humidity-variable vapour diffusion resistance characteristics. This provides superior protection against unforeseen moisture entry (e.g. through leaks, damp building materials or diffusion through adjoining structural surfaces), for thermal insulation and structural elements, compared to conventional vapour barriers/checks. The diffusion resistance of INTELLO PLUS has been designed so that the membrane can provide a moisture vapour transmission rate (MVTR) of over 50MNs/g in winter conditions. As a result, the vapour check will allow

almost no moisture to penetrate a structural system during winter, when humidity pressure on the system is at its highest. Diffusion resistance in summer can be reduced to an MVTR of less than 0.25MNs/g, permitting moisture that may be present in the roof or wall system to evaporate rapidly towards the inside.

Ancillary Products WINCON



The pro clima WINCON is a high performance dedicated testing device (9800m³/h at 50Pa pressure differential) in accordance with IS EN 13829:2000. It does not provide an expert opinion to be reached

about how airtight the building shell is, but simply tests the airtightness of the parts of the building that have been built, just like a plumber or gas engineer tests the water or gas tightness of the pipes they have installed. Testing is possible for full rafter insulation if there are no other large openings in the building shell (i.e. when all windows have been installed), but not for insulation above the rafters.



Figure 1: Bonding of Intello Plus to Concrete Slab using ORCON F

ORCON & ORCON F



ORCON F contains denatured alcohol (15%) allowing it to penetrate deep into stone substrates ensuring a very tight bond. The alcohol content means that the adhesive can be safely stored outside at temperatures as low as -20°C . ORCON is a similar adhesive but contains no alcohol and dries fast after application. These adhesives are suitable for bonding all of pro clima's vapour checks and air-proofing membranes to other building materials regardless of whether they have a smooth or rough surface. All surfaces should be clean and free of dust, grease and silicone. A continuous adhesive bead of at least 5mm in diameter, depending on the substrate, should be applied to the clean surface. The vapour check should be applied directly to the adhesive immediately after application and while still wet without applying force (see Figure 1).

ECO COLL



ECO COLL is a natural glue adhesive used in conjunction with DB+ to create a 'natural' airtightness layer. This product is solely for use with DB+ and should not be used with INTELLIO or INTELLIO PLUS.

CONTEGA PV



CONTEGA PV forms a high quality bond between vapour check, wood based panels (e.g. OSB) and masonry. The airtight bond is completed once the light blue PET fleece is plastered into place. The

latex-reinforced layer increases the strength of the adjoining plasterwork.

CONTEGA SOLIDO SL



CONTEGA SOLIDO SL is a diffusion resistant tape which provides a durable, secure, airtight connection from airtightness membranes, windows, doors or planed timber components, such as roof beams, rafters and floor beams, to brickwork or concrete that will be plastered at a later stage in the construction process. CONTEGA SOLIDO SL may be bonded directly to block walls and plastered at a later stage. TESCON RP Primer may be required to stabilise the masonry substrate prior to bonding.

CONTEGA SOLIDO EXO

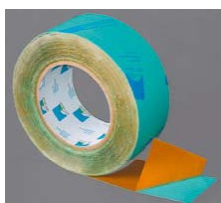


CONTEGA SOLIDO EXO is a diffusion open tape which is used for the exterior windproof sealing of windows, doors to brickwork or concrete that will be plastered at a later stage in the construction process. CONTEGA SOLIDO EXO may be bonded directly to block walls and TESCON RP Primer may be required to stabilise the masonry substrate prior to bonding.



Figure 2: Window Detail sealed with TESCON PROFIL

UNI TAPE



UNI TAPE is a universal tape with release paper. It bonds overlaps between sheets of vapour check. Rolls are 60mm wide and 30m long.

UNI TAPE XL/UNI TAPE PATCH



UNI TAPE XL is a repair tape and is suitable for sealing injection holes indoors. UNI TAPE PATCH comes in 180 x 180mm pre-cut patches for sealing injection holes indoors.

TESCON PROFIL



TESCON PROFIL is an adhesive tape with a 2-part release paper. The release paper comes off in strips for quick and awkward jobs in tight corners. This tape is suitable for windows (including roof windows), doors, planed timber and corners, and offers high protection against piercing in corners due to its high elasticity. Rolls are 60mm wide and 30m long.

TESCON VANA & No.1



provides greater rigidity.

TESCON No1 & TESCON VANA are both multipurpose tapes used to seal overlaps, service penetrations and repairing damaged areas. Standard rolls are 60mm wide and 30m long. Whereas TESCON No1 is extremely flexible, TESCON VANA features a polypropylene backing fleecing which

TESCON INVIS



TESCON INVIS is designed to conceal sealed overlaps in SOLITEX FRONTO QUATTRO when one is planning a cladding with opened joints. It is a multipurpose tape to seal overlaps between foil and fleece membranes and joints between such membranes and smooth, non-mineral surfaces. It is also suitable for sealing butt joints between wood based panels such as OSB. Rolls are 60mm wide and 30m long.

TESCON NAIDEC



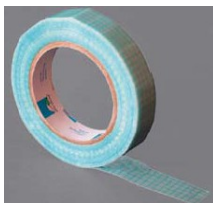
TESCON NAIDEC is a double-sided nail-sealing tape for use on the underside of a lath on inclined roofs to form a durable seal around nail or screw holes. Rolls are 50mm wide and 20m long.

TESCON PRIMER RP



TESCON PRIMER RP is an adhesive primer for wood, fibreboard, masonry, roof, wall and floor boards for preparing the substrate for subsequent bonding with pro clima TESCON No. 1 or TESCON PROFIL adhesive tape, or for ORCON F or ECO COLL joint adhesive.

DUPLEX



DUPLEX is a double-sided tape suitable for airtight and moisture-proof sealing of membranes to metal sections in dry construction. Rolls are 25mm wide and 20m long.

DA-S



DA-S is a vapour check and airtight sealing strip manufactured from PP with a robust Polypropylene Protection Fleece. DA-S strips are glued to building substrates to maintain airtightness continuity at critical junctions. Rolls are 210mm wide and 100m long.

Airtight Grummets KAFLEX & ROFLEX and TESCON No.1 Tape for Sealing Cables and Pipes



Grummets are made from non-ageing elastic EPDM and are available in a range of sizes from 6 up to 220mm. The grummets available are:

- Single (KAFLEX mono), double (KAFLEX duo) or multi (KAFLEX multi – up to 16 cables) cable grummets (see Figure 3)
- Pipe grummets (ROFLEX 20 to ROFLEX 200) (see Figure 4)

Pipes should also be sealed with the elastic adhesive tape TESCON No.1 (see Figure 4).

EXTOSEAL ENCORS



likelihood of standing water.

EXTOSEAL ENCORS is a water bearing butyl connection tape with high adhesion strength. EXTOSEAL ENCORS is the ideal weather tight tape for creating robust flashings for window sills and door thresholds and any junctions where there is a

EXTOSEAL MAGOV



EXTOSEAL MAGOV is a highly flexible butyl tape for making airtight connections around service penetrations, joist ends and wall to corrugated deck connections.

EXTOSEAL FINOC



slab floor. EXTOSEAL FINOC is the ideal watertight capillary break tape used to eliminate rising damp under sole plates.

EXTOSEAL FINOC is an air and moisture tight tape. It can be used for joining wood-based panels to smooth mineral surfaces such as internal timber frame boarding to concrete

INSTAABOX



INSTAABOX is an installation box for creating space for junction boxes etc. in buildings without a service void behind the dry-lining. It is designed for making airtight connections on vapour check and airtightness layers, and can be used on all common substrates in construction.

2.2 MANUFACTURE

The manufacturing process of INTELLO PLUS involves the bonding together of a polyethylene copolymer membrane with a polypropylene fleece together with a polypropylene reinforcement net through an extrusion

coating process, involving heat and pressure in a continuous process. The same process is used to manufacture of INTELLO and DB+.

2.2.1 Product Quality Control

Quality control checks are carried out on the raw material, during production and on the final product. Quality control checks include:

- Visual inspection
- Dimensions
- Tensile strength
- Elongation
- Tear resistance
- Nail tear strength

The management systems of the manufacturing plant have been assessed and registered as meeting the requirements of ISO 9001:2000 by TÜV Nord Cert GmbH, Germany.

2.3 DELIVERY, STORAGE AND MARKING

Rolls are supplied on pallets, wrapped in PE foil with product information label inside. This label gives manufacturer's name and product description, NSAI Agrément identification mark and NSAI Agrément Certificate number. The products should be stored on a clean level surface, above ground and away from water and contamination, under cover and away from direct sunlight.

2.4 INSTALLATION

This section of this Certificate will deal solely with Intello Plus – installation of Intello and DB+ is very similar and the Certificate holder's instructions should be followed.



Figure 3: Wall Detail with Single Cable Grummet



Figure 4: Roof Detail with Pipe Grummet

2.4.1 General

The pro clima Intelligent Airtight System must be installed in accordance with the manufacturer's instructions and the recommendations given in this Certificate. This section of the Certificate will detail the installation procedure for INTELLO PLUS, as this procedure is very similar to that of INTELLO and DB+.

The diffusion resistance of INTELLO PLUS is designed to ensure that an effective diffusion resistance is maintained even in high humidity conditions, for example in newly built houses or in rooms which are prone to high short-term humidity levels, such as kitchens and bathrooms.

Newly built houses have high indoor humidity levels due to moisture released during construction and due to use. The diffusion resistance of the vapour check should be such that it is at least 10MNs/g even at an average humidity of 60% (room humidity 70%, humidity within the construction 50%) in order to adequately protect the structure from airborne humidity. INTELLO PLUS has a diffusion resistance of approximately 20MNs/g at a relative humidity of 60%.

During construction, when plaster or screed is being laid, the humidity in a building can be very high. At an average relative humidity of 70% (room humidity 90%, humidity within the construction 50%) the diffusion resistance of a vapour check should be above 7.5MNs/g in order to protect the structure from excessive moisture from the high humidity on the building site and thus preventing mould growth. INTELLO PLUS comfortably exceeds this with a diffusion resistance of 10MNs/g at a

relative humidity of 70%. The moisture carried by building should always be allowed to escape from the building as rapidly as possible by ventilating well (through open windows). Dryers are recommended in the winter to accelerate the drying process in order to prevent the high relative humidity persisting long-term.

2.4.2 Installation Procedure

INTELLO PLUS should be laid with the membrane-coated side (i.e. with writing on) facing indoors. It can be laid flat either horizontally or vertically on the sub-structure, such as the rafters, without sagging. If laid horizontal then the maximum space permitted between the rafters is 1m. After laying it is necessary to support the weight of the insulation with lathing on the inside. The laths should be no more than 500mm apart.

Staples at least 10mm wide and 8mm long, between 100 and 150mm apart, should be used to attach the membrane when using insulating boards. The sheets of the membrane should overlap by approximately 100mm.

Insulation should never be installed more than 2 days, room by room, before the membrane is installed, especially in winter months, in order to prevent the insulation becoming moist from the indoor air.

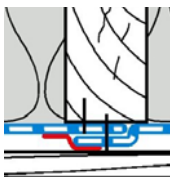
INTELLO PLUS can also be used as a membrane for all types of blown-in insulation. A reinforcing layer prevents stretching during injection of the insulating material. If laid along the sub-structure it has the advantage that the overlap is supported on a firm foundation and is therefore protected. The staples used to attach the

membrane should be between 50 and 100mm apart. If laid at right angles to the sub-structure a supporting lath should be attached directly on top of the taped overlap, after it has been installed, in order to prevent the tape from being subjected to tension. Alternatively, the tape can be reinforced along the overlap by sticking tape at right angles to the overlap every 300mm.

To maximise the performance of pro clima intelligent vapour checks, layers which may prevent vapour diffusion, such as OSB or plywood, should not be applied on the inside of the membrane, particularly if the construction is vapour diffusion tight externally.

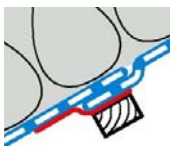
Installing Parallel to the Sub-Structure

Installing the tape along the sub-structure, e.g. along the rafters, has the advantage that the overlap has a firm foundation. It is therefore possible to exert a lot of pressure on the tape. The overlap isn't subjected to forces by the thermal insulation, allowing an ideal bond to be formed.



Installing at Right Angles to the Sub-Structure

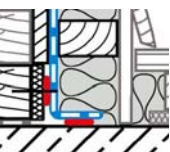
When applying the sheets of membrane at right angles to the sub-structure, e.g. at right angles to the rafters, make sure that the sheets of INTELLO PLUS are stretched tight to allow as much pressure as possible to be exerted when applying the tape.



Since the insulation is resting on the overlap and may exert a force on it, ensure that the tape is applied centrally. If using blown-in insulation, installation along the sub-structure is recommended. If laid at right angles, affix laths below and parallel to the tape in order to reduce the load exerted on the tape by the insulation, or apply additional tape at right angles to the overlap every 300mm.

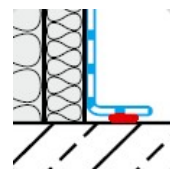
Sticking to Concrete Slabs

Using a double dispensing gun, apply two strands of ORCON F to concrete or OSB panels. Press the strip of vapour check onto the adhesive without squeezing it in. ORCON F does not stick to silicone-coated surfaces



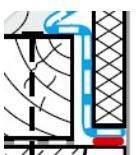
Sticking to Concrete Floor Slab

Sweep the concrete surface and remove fine dust if necessary. Stick the INTELLO PLUS membrane to the floor slab using ORCON F. Fill any gaps around brackets or screws with airtight joint adhesive.



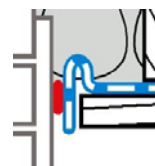
Sticking to Eave Plate

Install the vapour check over the eave plate and stick it onto the tie beam using ORCON F, in order to form a seal between the eave plate and the tie beam.



Sticking to Plastered Gable Wall/Concrete

Install the vapour check with sufficient slack to allow for movement in the structure. The use of a pressure lath is recommended if laying the vapour check in frosty weather, when the adhesive will take longer to dry, or if the substrate is unstable.



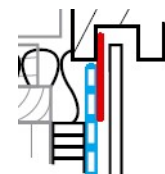
Sticking to Window Frames or Wood Based Panels

Use TESCON PROFIL to create an uninterrupted airtight seal around window frames.



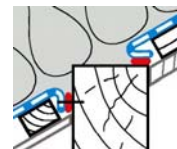
Sticking to Roof Window Frames or Wood Based Panels

Stick the vapour check into the groove to create an uninterrupted airtight seal around the frame of the roof window using TESCON PROFIL.



Sticking Visible Middle or Ridge Purlins and Vapour Check or Wood Based Panels

Stick the vapour check to the top or side of the planed middle purlin with ORCON F to create an airtight seal. Take care when positioning to ensure that it is properly covered by the inner lining.

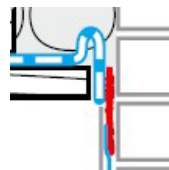


Sticking Membrane Sheets and Wood Based Panels to Unrendered Masonry

CONTEGA PV or CONTEGA SOLIDO SL plaster bonding tape can be used to form an effective seal between the vapour check and the plaster. The vapour check is joined to the airtight CONTEGA PV/SOLIDO SL fleece with the integrated tape. While CONTEGA SOLIDO SL is plastered on one side, CONTEGA PV must be embedded in the plaster. Embedding the fleece in the central layer of the plaster forms an airtight connection from the membrane to the plaster rendering on the wall.

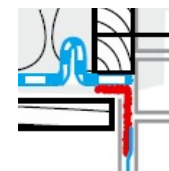
First Rafter

Sticking the vapour check to the masonry/plaster without a firm foundation. It is important to ensure that there is some slack to compensate for movement of the structure.



Lathing

Sticking the vapour check to the masonry/plaster supported by laths or battens. CONTEGA PV can also be affixed to a supporting lath or batten on the wall.



Sticking to Unrendered Surfaces

Fix the CONTEGA PV tape in position on the wall with nails or spots of ORCON F. On soft substrates such as expanded concrete, pumice concrete or hollow elements, nail directly onto the bricks, otherwise nail between the bricks. The airtight CONTEGA PV fleece is subsequently embedded in the central layer of the plaster. Avoid voids or air bubbles below the tape, i.e.

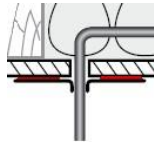
make sure that the tape is firmly stuck to the wall, especially at the top edge of the tape. Once the CONTEGA PV fleece has been attached to the wall, stick the vapour check to the tape on the CONTEGA PV leaving some slack to allow for movement.

2.4.3 Penetrations

Pro clima have produced a larger variety of service grummetts. These are called KAFLEX and ROFLEX. Creating an airtight seal around pipes and cables which pass through the INTELLO PLUS airproofing layer is quick and cost-effective using pro clima KAFLEX and ROFLEX grummetts. These grummetts are made of non-ageing elastic EPDM rubber and are available in a range of sizes from 6 to 300mm. Another advantage of these grummetts is that the cable or pipe can easily be moved within the gasket after installation if necessary. Alternatively, it is also possible to seal pipes using TESCON No.1 tape.

KAFLEX mono, duo and multi

Single, double or multi grummetts (DIY-set for up to 16 cables, diameter 6 to 12mm).



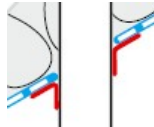
ROFLEX 20

Conduit grummetts are to be used for conduits or thick cables (diameter 15 to 30mm).



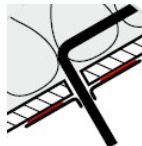
ROFLEX 20, 30, 50, 100, 150 200, 250 and 300

Pipes can be sealed using ROFLEX pipe grummetts, which are available in diameters from 20 to 300mm.



Pipe Seal and TESCON No.1 Tape

Alternatively, pipes can be sealed using TESCON No.1 elasticated tape. Ensure that no tension is exerted on the bond. A tension-free joint can be achieved by using short pieces of tape.



3.1 GENERAL

The pro clima Intelligent Airtight System is suitable for traditional masonry and timber frame constructions. Suitable timber frame constructions are defined as those designed and built in accordance with the relevant parts of Eurocode 5 – Design of timber structures.

3.2 STRENGTH

INTELLO PLUS, INTELLO and DB+ will resist the loads associated with the installation of the material on to a wall, roof or ceiling.

The membranes should not be left uncovered for longer than is absolutely necessary. Should the membranes be damaged by high winds, careless handling or by vandalism, any damaged areas should be repaired or replaced before the final internal finish is applied.

3.3 VENTILATION

The pro clima Intelligent Airtight System can minimise background air leakage (uncontrollable ventilation) and provide controllable ventilation through use of trickle vents, passive ventilation and mechanical ventilation. In accordance with good building construction practice, all openings for services and trap doors should be draught sealed, and trap doors should not be located in bathrooms, shower rooms or kitchens

3.4 CONSERVATION OF FUEL AND ENERGY

In conventional constructions, energy loss by air infiltration and exfiltration can account for a significant portion of the total heat loss through the building envelope. The pro clima Intelligent Airtight System, when installed as per the manufacturer's instructions and this Certificate, will significantly reduce the potential for interstitial condensation, reduce heat loss due to convection, and significantly reduce the possibility of structural degradation, dry rot and mould growth.

3.5 VAPOUR RESISTANCE

pro clima's range of Intelligent vapour checks feature a humidity variable diffusion resistance. This technology ensures their INTELLIGENT membranes may become more vapour 'diffusion open' when required. This means that they have the ability to alter their vapour diffusion resistance depending on the average relative humidity surrounding the vapour check (See Figure 5).

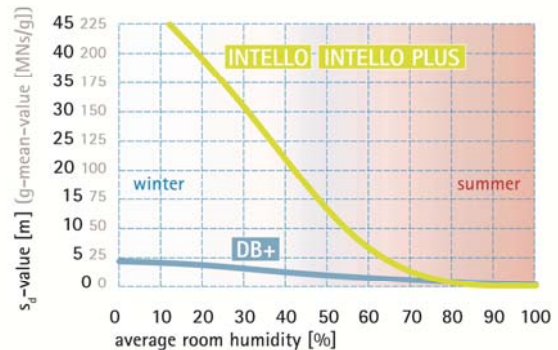


Figure 5 - Humidity-Variable Vapour Check

In winter the membrane remains diffusion tight and will resist the diffusion of vapour from the internal fabric of the building into the insulated layer.

In summer pro clima's membranes, INTELLO, INTELLO PLUS and DB+, may become more vapour open, and as such if vapour pressure were to build up behind the membrane, this moisture which may be trapped in the insulated fabric of the building is allowed to back dry to the inside of the building.

3.6 CE MARKING

The manufacturer has taken the responsibility of CE marking INTELLO, INTELLO PLUS and DB+, in accordance with the Construction Products Regulation No. 305/2011 and harmonised standard I.S. EN 13984:2013, *Flexible sheets for waterproofing - Plastic and rubber vapour control layers - Definitions and characteristics*. An asterisk (*) appearing in this Certificate indicates that data shown is an essential characteristic of the product and declared in the manufacturer's Declaration of Performance (DoP). Reference should be made to the latest version of the manufacturer's DoP for current information on any essential characteristics declared by the manufacturer.

4.1 BEHAVIOUR IN FIRE

INTELLO PLUS, INTELLO and DB+ were tested to IS EN ISO 11925-2:2010 *Reaction to fire tests – Ignitability of building products subjected to direct impingement of flame – Single flame source test* and IS EN 13501-1:2007 *Fire classification of construction products and building elements – Classification using data from reaction to fire tests*. INTELLO PLUS, INTELLO and DB+ achieved a fire class of E.

Cavity barriers must be provided as indicated in Section 3 of the TGD to Part B of the Building Regulations 1997 to 2014.

The toxicity risks in relation to the pro clima Intelligent Airtight System in the event of fire are negligible in wall construction.

4.2 WATER PENETRATION

The pro clima Intelligent Airtight System, when used in accordance with this Certificate, presents no significant risk of water penetration.

4.3 WATER VAPOUR PENETRATION AND CONDENSATION RISK

The risk of condensation is highest in new-build construction during the first heating period, where there is high moisture loading due to wet trades, such as in-situ cast concrete slabs or plaster. The risk of condensation diminishes as the building naturally dries out. Dryers are recommended in the winter to accelerate the drying process in order to prevent the high relative humidity persisting long-term.

The general design guidelines contained in TGD to Part F of the Building Regulations 1997 to 2014 and BS 5250:2011 *Codes of practice for control of condensation in buildings* must be met when installing the pro clima Intelligent Airtight System.

The water vapour transmission resistance values of INTELLO PLUS, INTELLO and DB+ are shown in Table 1.

4.4 DURABILITY

The pro clima Intelligent Airtight System will be unaffected by the normal conditions found in a wall, roof or ceiling construction and will have a life comparable with other elements of construction in accordance with BS 7543:2015 *Guide to the durability of building elements, products and components*. However, the membrane like most similar materials must be protected from sunlight, flame and solvents.

4.5 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING:

- Dimensional accuracy
- Tensile strength
- Density
- Nail tear resistance
- Elongation at break
- Water vapour permeability

- Dimensional stability
- Efficiency of the construction and installation process

4.6 OTHER INVESTIGATIONS

- (i) Existing data on product properties in relation to fire, toxicity, environmental impact and the effect on mechanical strength/stability and durability were assessed.
- (ii) The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.
- (iii) Blower door and WINCON site tests were performed on the pro clima Intelligent Airtight System.
- (iv) A condensation risk analysis was performed.

5.1 National Standards Authority of Ireland ("NSAI") following consultation with NSAI Agrément has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of issue or revision date so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations 1997 to 2014 and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.
- (c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.
- (d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.
- (e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.
- (f) the registration and/or surveillance fees due to NSAI Agrément are paid.

5.2 The NSAI Agrément mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the NSAI Agrément mark and certification number and must remove them from the products already marked.

5.3 In granting Certification, the NSAI makes no representation as to;

- (a) the absence or presence of patent rights subsisting in the product/process; or
- (b) the legal right of the Certificate holder to market, install or maintain the product/process; or
- (c) whether individual products have been manufactured or installed by the Certificate holder in accordance with the descriptions and specifications set out in this Certificate.

5.4 This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act 2005, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.

5.6 The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.

5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.

NSAI Agrément

This Certificate No. **07/0297** is accordingly granted by the NSAI to **Moll bauökologische Produkte GmbH** on behalf of NSAI Agrément.

Date of Issue: **December 2007**

Signed



Seán Balfé
Director of NSAI Agrément

Readers may check that the status of this Certificate has not changed by contacting NSAI Agrément, NSAI,
1 Swift Square, Northwood Business Park, Santry, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807
3842. www.nsai.ie

Revisions: **February 2016**

Product specification updated to reflect manufactures Declaration of Performance (DoP).