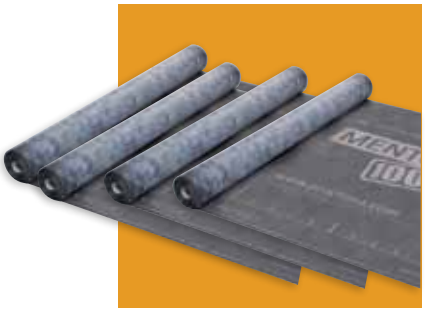
System SOLITEX MENTO

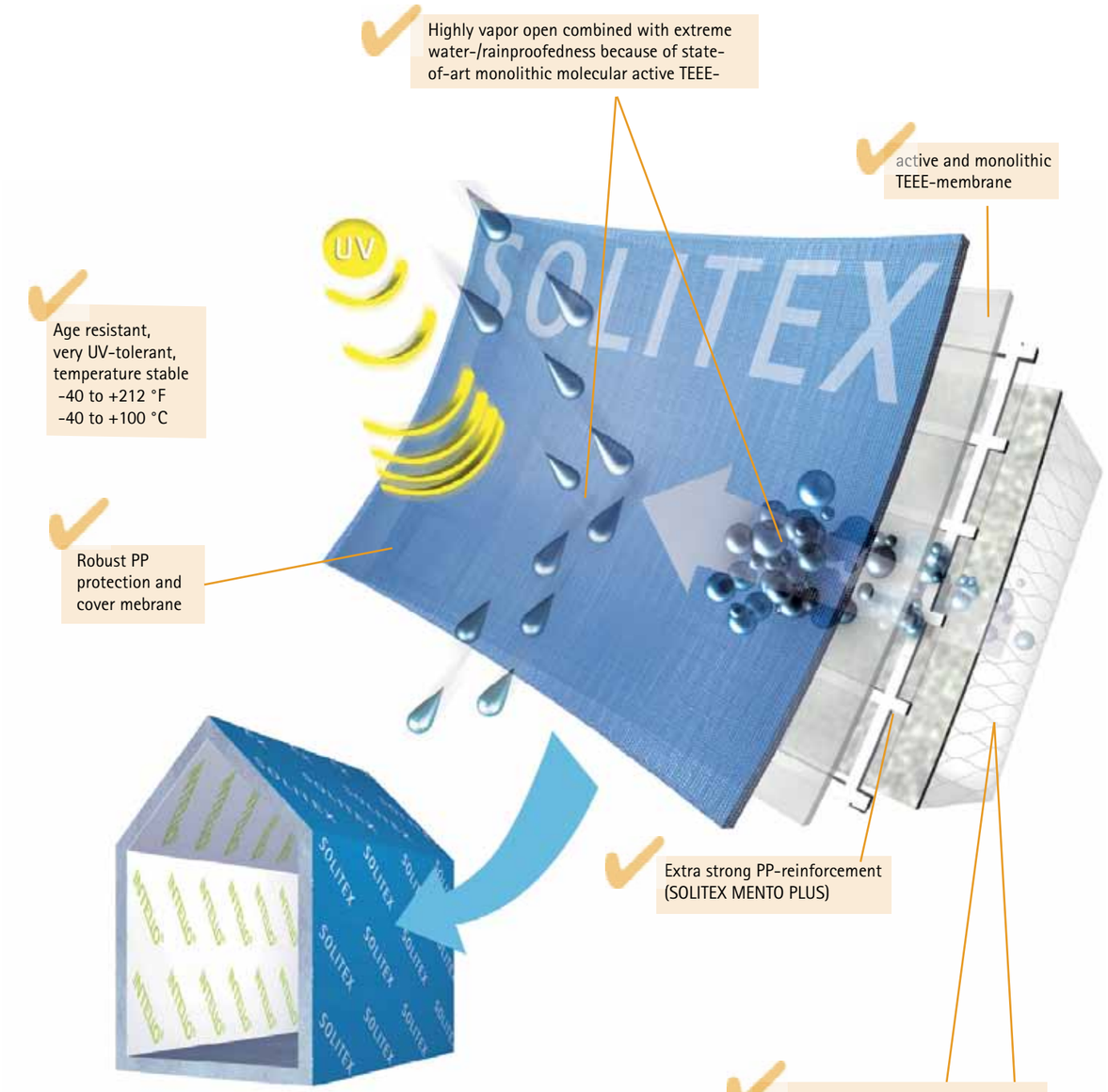
Optimized protection of roofs and walls

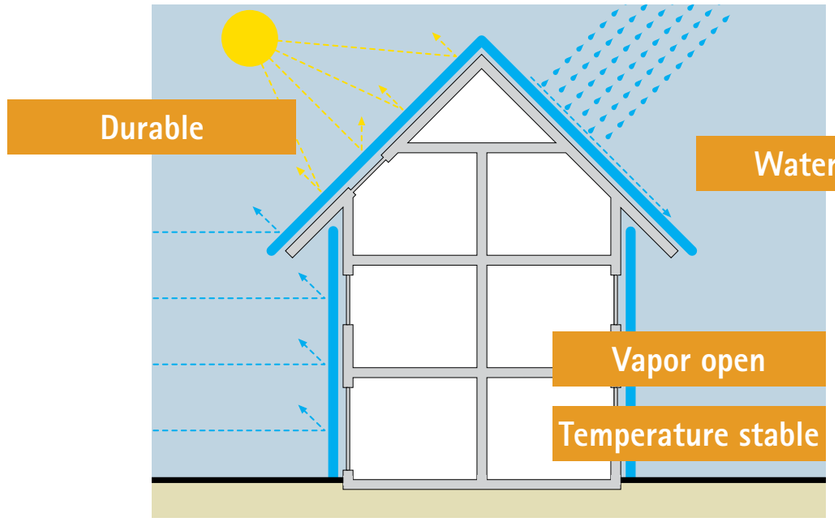
pro clima's SOLITEX MENTO system – a very vapor open WRB for Rainscreens and Subroofs



pro clima®

Optimized protection of walls and roofs
pro clima's SOLITEX System





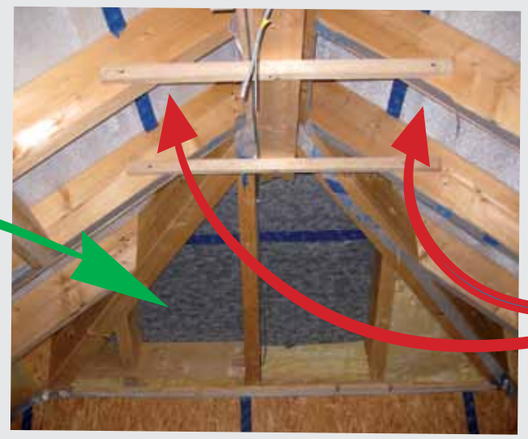
Designed for rainscreen and subroof applications

WRB and subroof-membranes are exposed to climatic stress (UV,wind) during construction. To protect the structure from this direct weather exposure in this phase SOLITEX Mento's monolithic membrane makes it highly resistant to driving rain and also compeletly waterproof. A necessity during construction that also ensures the longterm protection of the enclosure.

Additionally WRB's and sarking membranes have to be highly diffusion open to assure that water vapor can unhindered and quickly dry outwards.

New baselines: Monolithic SOLITEX Membrane

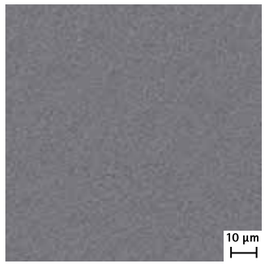
Non-porous SOLITEX MENTO Membran: active vapor diffusion -> dryer enclosure, highly reduced condensation risk.



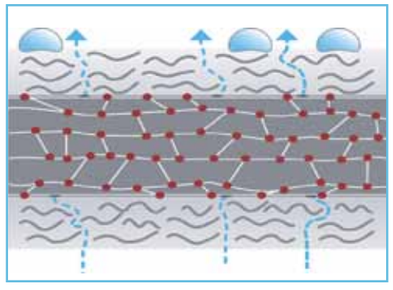
One roof, similar exposure, dramatically different results: non-porous SOLITEX MENTO membrane straight ahead, on left/right faces a micro-porous membrane

SOLITEX Techinical principals:

Monolithic membrane optimizes enclosure



Mircroscopic image of the monolithic, pore free SOLITEX MENTO Membrane. Liquid water even when it's surface tension is broken, will not leak into the structure. Water vapor is actively dried outwards by the functional membrane.



This monolithic membrane, which is free of pores, actively transports vapor along its molucair chains to the exterior. Combining excellent vapor diffusion and outstanding waterproof

Pore free membrane transports vapor actively outwards – the higher the vapor load, the faster the transportation. However for outward vapor transportation to occur, only a minimal vapor pressure difference is needed.

The exterme waterproofing, also against driven rain, is assured as the membrane doesn't countain any pores. High windloads or reduced surface tension of water also do not reduce SOLITEX's waterproofedness.

Pore free SOLITEX MENTO Membrane:

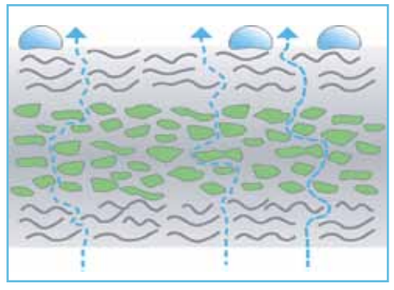
- ✔ Maximum protection against driving rain
- ✔ Watercolumn of at least > 8'4" / 2.500 mm
- ✔ Active vapor diffusion
- ✔ Works even at very low vapor pressures differences
- ✔ Membrane increase diffusion when condensation forms
- ✔ No-tenting effect (tents leak...)
- ✔ Can be used a temp. roof

Actively open
... absolutely raintight

Conventional approach: Membranes with Micropores

Micro-porous membrane, no active vapor transporation -> condensation forms and creates vapor closed film -> wet construction

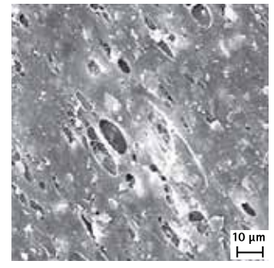
Conventional WRB: Microporous-membranes



Porous membranes allow vapor to pass. They offer average water- and rainproofing.

Conventional WRB membranes from PP that depend on micropores to be vapor open. In case large amounts of vapor need to pass through there is a risk that a vapor/moisture film forms on the interior of this membrane. Result: the membrane becomes vapor closed (perm rating decreases), damage could occur.
The vapor transportation to the exterior is passive, it only function if there is a relatively high vapor drive. In modern, super insulated constructions isn't always the case.

Bulk (rain) water protection is in principal assured. Since liquid water, because of it's surface tension, is to large to fit though the small pores. But when exposed to wind-driven rain, or when wood resins or perservatives break the surface tension, substantial amounts of water can enter the enclosure/insulation layer and can cause structural damage or mold.



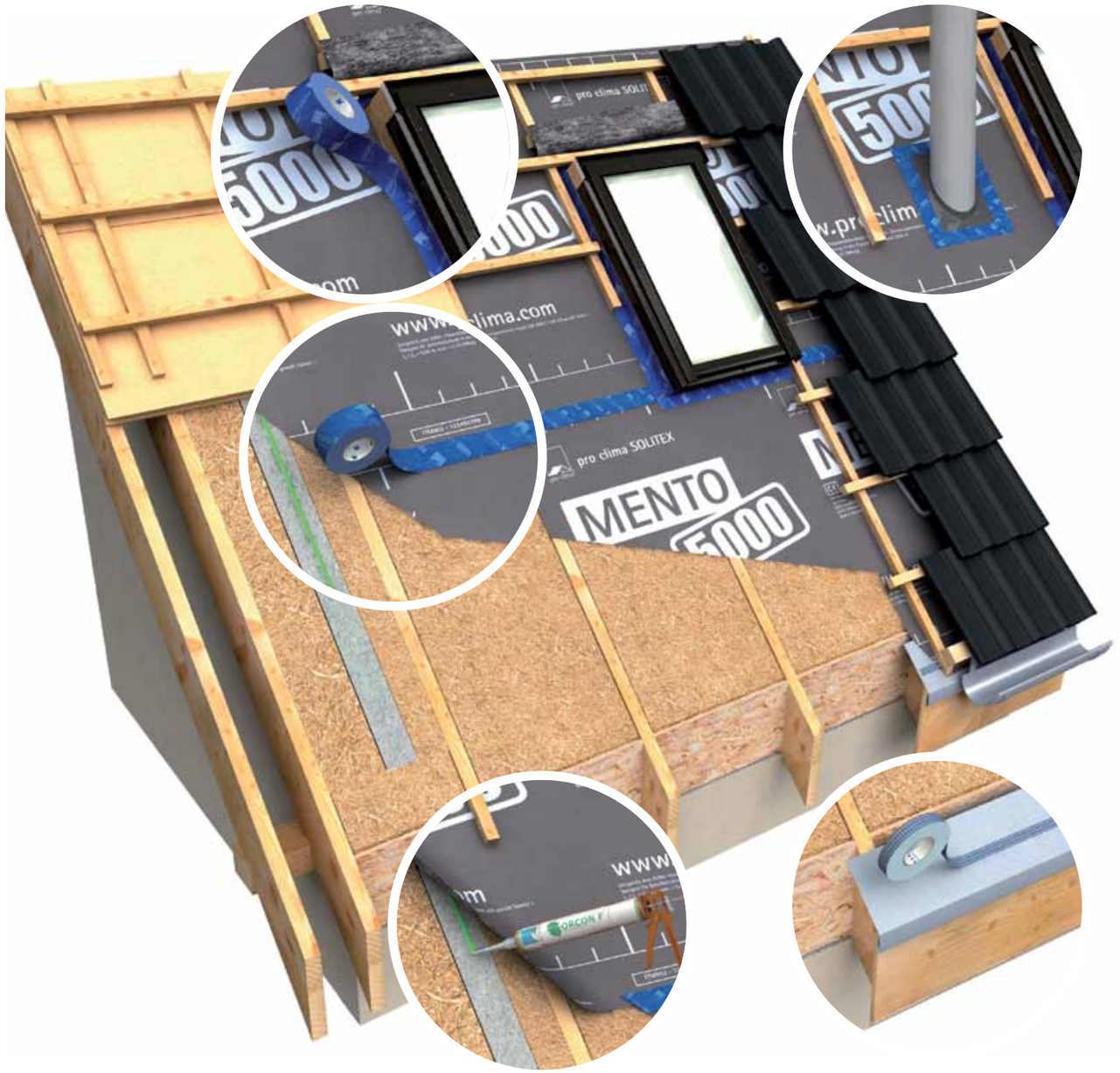
Same microscopic photograph of a porous conventional WRB membrane.. During production the PP-membrane is stretched an Calciumcarbonat is added. It is waterproof becaue the mircopores that are formed are so small that liquid water will not pass through them because of their surface tension. The pores do allow watervapor to pass thought.

Microporous membranes/WRB:

- ✘ Ordinairy water resistance against driving rain
- ✘ Passive vapor diffusion
- ✘ Requires high vapor drive/pressure to work
- ✘ Risk to become vapor closed through formation of condensation-film

Exterior wind- and waterproof WRB

SOLITEX MENTO system



For all applications the perfect solution

SOLITEX MENTO 1000
3-layer rainscreen WRB and subroof/sarking membrane.
Active monolithic TEEE-functional membrane

SOLITEX MENTO PLUS
Reinforced 4-layer rainscreen WRB and subroof/sarking membrane. For use as densepack insulation netting

System components

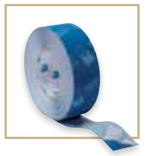
TESCON No.1 / TESCON VANA
For waterproof tape connections of joints

TESCON Invis
Black TESCON tape for invisible application under open jointed rainscreens

DUPLEX
Double sided tape to connecti membrane ends and overlaps.

Waterproof and airtight tapes and adhesives

For durable connections at membrane overlaps and at connections to solid construction elements.



TESCON PROFIL
To connect membrane to windows, doors and corners.

Specialty tape for windows and corners

Tape with split release facilitates exact application at corners and window/ skylight connections and at corner created by intersection of membrane by joist,beams etc.

Contega HF
For connections to adjoining construction elements.

Adhesive caulk in cartridge

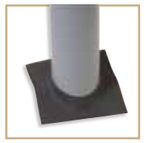
This non-embritteling doesn't dry out and make waterproof and airtight connections between membrane and solid construction elements.

TESCON NAIDEC
Double sided butyl tape for waterproofing under vertical battens

Specialty tapes for roof-battens

Double sided tape makes waterproof seals around screws/nails that are driven through battens and SOLITEX membrane

KAFLEX mono/duo,
Cable collars fit snugly over cables/pipes. UNITAPE to be covered by TESCON tape for waterproof seal



ROFLEX
Collars are slid over pipes and secured with TESCON tape to SOLITEX membrane

Collars for cables and pipe sealing

For waterproof and airtight seals around any size cable or pipe (up to 250mm/8")

Exterior wind- and waterproof WRB

Exterior solutions

System MENTO 1000

3-layer subroof and rainscreen WRB, 110 g/m²

System based on a highly tear resistant, highly diffusion open rainscreen WRB and subroof/sarking membrane that can be used to protect plywood, OSB, etc and over large variety of rigid insulation materials (woodfiberboard, mineral wool, etc).

- ✔ Tear resistant because of protective PP layer
- ✔ Extremely resistant against driven rain
- ✔ Weather/UV exposure time up to 3 months
- ✔ Actively vapor open through monolithic functioning membrane
- ✔ High temperature stability
- ✔ Suitable as temporary roofing according to ZVDH regulations

SOLITEX Mento 1000 at Ryall Porter Sheridan's passive house project in Orient Point NY

Windtight and waterproof rainscreen WRB over 5" of mineral wool - open joint rough cut siding.

Exterior wind- and waterproof WRB

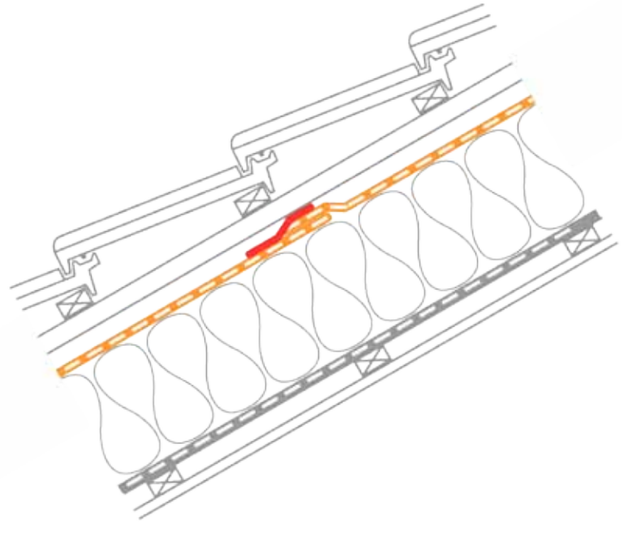
Reinforced solutions

SOLITEX MENTO PLUS

reinforced 4-layer rainscreen WRB and subroof/sarking membrane - 170 g/m²

Extremly tear resistant, highly diffusion open rainscreen WRB and subroof/sarking membrane can be used under siding, to protect plywood, OSB, woodfiberboard, mineral wool and large variety of insulation materials including dense packed cellulose.

- ✔ High resistance against puncturing and stepping through subroofs
- ✔ Actively vapor open through monolithic functioning membrane
- ✔ Weather/UV exposure time up to 3 months
- ✔ Actively vapor open through monolithic functioning membrane, high temperature stability
- ✔ Suitable as temporary roofing according to ZVDH regulations



Design and constrution recommendations

Guidelines ZVDH

Recently the German trade organisation of roofers (ZVDH) has issued new product guidelines for subroofs and WRBs. If a membrane is only solely used as roof underlay that is placed underneath a permant roof, then these guidelines weren't changed. However if the membrane is used as a waterproof subroof, than additional protection against driving rain and other ageing requirements have to be met. Consequently manufacturers are required to provided suitable solutions to comply with these guidelines.

pro clima meets these stengthened guidelines with SOLITEX Mento subroofs in combination with the all-around TESCON Vana tapes, dem Anschlusskleber ORCON F bzw. ORCON CLASSIC und dem Nageldichtungsband TESCON NAIDEC ein komplettes System für sichere Unterdeckungen und Behelfsdeckungen entsprechend den Anforderungen des ZVDH.

Intended use

The SOLITEX MENTO membranes can be used as rainscreens, WRBs, subroof and sarking membranes. They stop the wind from infiltrating into the building fabric and thus assures the optimum performance of the insulation.
Because of SOLITEX MENTO's extra-ordinairy waterproof charisterics and the its conformance to the demanding ZDVH guidelines (German trade organisation of roofers) it can be safely used as waterproof subroofing.

The guidelines of the ZDVH require that temporary waterproofing membranes when used with rooftiles or roofstones (slate,etc) are shiplapped from top to bottom to assure rain-proofing of the roof.

Use as subroofing/sarking membrane

To protect the construction during the construciton phase, the SOLITEX Mento membrane can be used up to 6 weeks as temporary rofing. The roof pitch should be at least 16° (3.5"/12"). The assembly of the temporary roof should be made in this case with SOLITEX MENTO membranes and its connections are waterproofed with TESCON NAIDEC nail sealing tape, CONTEGA HF and TESCON No.1 / TESCON VANA
.

Application should conform to latest application guides, please contact the techincal hotline with any questions.

Rain exposure could cause dark spots to appear on the membrane. These are harmless and have no influence on the waterproofing or functioning of the monolytic membrane beneath this protective layer.

No venting required

The extremely high diffusion-open properties of pro clima SOLITEX Mento negates the need for venting of the inside of the roof sheathing and insulation.. The membrane can be mounted directly over the insulation i.e. the insulation can take advantage of the full rafter depth.

It also prevents the construction of ineffective and time consuming venting constructions at eaves and ridges (venting eaves, insulation baffles, channels, ridge vents, openings covered bymosquite netting, etc).

Application and securing

SOLITEX MENTO is applied with the dark grey/ black side outwards (printed side). The membranes should be pulled taut and perpendiculair to the gables. The horizontal and shiplapped application is recommended for water shedding purposes (also during construction). The lower the sloped, the larger overlaps should be (min. 4"-100mm). The maximum distance of rafters when using MENTO as a subroof/sarking membrane (w/o plywood) is 40" (1m).

To secure membrane use staples (T50 - minimum 5/16"-8mm legs and 3/8"-10mm crowns) or roofing nails. Only connect in areas that will either be below an overlap, below battens and TESCON Naidec or will be taped with TESCON Vana/No.1). Maximum distance of staples 4"-6". In case MENTO PLUS is used as a blow in membrane staple every 3" or less, tape staples as appropriate.

Extermely open to diffusion

Humidty from the building is dried outwards rapdilyand unimpeded. This is important advantage during construction (when lumber might still be wet) as well during the operational life of the building. (when humidty produced inside can enter the structure through diffusion and convection.

Construction humidty (tiling, plastering, drywall compound) shall priamirly be vented through opening windows or mechanical means. This so extended periods of high humdity during the constrcution phase are prevented.

SOLITEX MENTO Design and construciton recommendations Windtightness on exterior

Treated wood not needed

According to DIN 68800-2 (November 2009) a chemical wood treatment is no longer recommended if the sheating/waterproofing of a construction has an permeance of above 10.9 perms (s_d-Wert ≤ 0,3 m). This requirement is also valid for vented rainscreens from dry-solid wood. In these constructions the highly diffusion open SOLITEX MENTO membranes negates the need to protect the wood by chemical treatment.

No tenting effect

The SOLITEX MENTO membrane is pore free and extermely waterproof, even when exposed to driving rain. The SOLITEX MENTO WRB can completely can be in direct contact with and cover the insulation layer. Its monolytic membrane and the multi-layered assembly assure that no tenting effect will occur. The tent-effect is the phenomonon that waterproof layers, when touched/supported will capiliary activate and leak large amounts of water (as a tent touched on the inside when it rains).

pro clima SOLITEX MENTO membranes and ZVDH roof classifications:

Definition per ZVDH	pro clima SOLITEX [1]	Adhesive tapes, Nail-sealing tape	Class
SUBROOFS/SARKING MEMBRANES			
Edges adhered and perforations sealed subroofs	pro clima SOLITEX UD, SOLITEX PLUS, SOLITEX MENTO 1000, MENTO 3000, MENTO 5000 and MENTO PLUS (and connect variants) with pro clima system components	Adhesion conforming to the Pro Clima application matrix and with TESCON NAIDEC	3
Edges adhered subroofs		Adhesion conforming to the Pro Clima application matrix w/o TESCON NAIDEC	4
Overlapped subroofs	pro clima SOLITEX UD, SOLITEX PLUS, SOLITEX MENTO 1000, MENTO 3000, MENTO 5000 and MENTO PLUS	solely overlapped	5
ROOF UNDERLAY			
Edges adhered and perforations sealed roof underlay	pro clima SOLITEX UD, SOLITEX PLUS, SOLITEX MENTO 1000, MENTO 3000, MENTO 5000 and MENTO PLUS (and connect variants) with pro clima system components	Adhesion conforming to the Pro Clima application matrix and with TESCON NAIDEC	3 [2]
Edges adhered roof underlay		Adhesion conforming to the Pro Clima application matrix w/o TESCON NAIDEC	4
Roof underlay	Tautly connected or freely overlapped pro clima SOLITEX UD, SOLITEX PLUS, SOLITEX MENTO 1000, MENTO 3000, MENTO 5000 and MENTO PLUS	solely overlapped	6

[1] pro clima SOLITEX MENTO membranes are always covered by battens, these battens are not considered.
[2] For roof underlays according to USB-A - pro clima MENTO membrane conform to these requirements.

Membrane composition

The functional membrane in SOLITEX MENTO is made from a Thermoplastic Elastomer-Ether-Ester, the protective covering layers are Polypropylene. All SOLITEX MENTO membrane conform to DIN EN 13859-1 and carry the CE-mark.

Application Guide

Membrane appliciaton and fixation

Apply membrane perpendiculair to structure pitch. Dark grey/black side to face outwards.

Only secure the membranes in upper third of the overlap and underneath the counterbattens. Use galvanized staples (T50 minimum. 3/8"-10 mm wide – 5/16"-8 mm deep). Do not make connections in areas where water could pond (valleys).

When using SOLITEX Mento Plus, secure membrane every 2"-3" (50-75mm) with a staple paralel to the direction of the stud/rafter below. Make all staples waterproof with TESCON Vana or TESCON Naidec.

Membrane overlaps

Overlap membranes at least 4"-6", 10-15cm. Use the printed lines as guides.

Membrane connections

The pro clima exterior tapes adhere very well to the following materials:

- dry, smooth, dust-, bitumen- and grease-free substrates
- smooth wood based substrates (Plywood, OSB, other solid wood panels)
- milled or wood
- Plastics, Glass and metals
- PE-, PA-, PP-*, Aluminum foils (surface tension- > 40 dyn)
- smooth mineral based substrates (ie. plaster, concrete, brick that has been prepared with TESCON PRIMER RP/AC.
- Woodbased fiberboard (ie GUTEX) (prepared with TESCON PRIMER RP/AC.)

Adhesion to frozen materials is not possible. Materials should be suitable for durable connections. Best results are achieved with high quality substrates. To assure optimal adhesion, the tape shall be pressed down with force over the entire length. A solid substrate (wood panels, rigid insulation etc.) is advantageous. The taped connections shall not be exposed to permant tensile forces. It is recommended that the suitability of the substrate shall be independantly verified in an adhesion test before construction starts.

* Polyehtelene (PE), Polyamide (PA), Polypropelene (PP)

Repairs

Holes in and puncturing of the SOLITEX membranes can be repaired with the all-around tapes TESCON Vana and TESCON No.1. If large damage occurs, a repair patch can be cut to size and adhered to the membranes with the TESCON tapes. The patch shall overlaps the membrane damage at least 4"-6" on all sides.

Connections of SOLITEX MENTO membrane and butt joints with the single sided all-around tape TESCON Vana / TESCON No.1
Butt joints shall be made beneath counterbattens. To connect membranes, pull it taut and remove all creases. SOLITEX Mento shall be dry, free of dust to assure proper adhesion. Remove release paper and press down with force. A solid substrate is best (plywood, rafters, rigid insulation materials, etc.). Connections should be free of creases. Assure proper adhesion by pressurisation of entire tape length by hand or PRESSFIX.

Connections with specialty tapes

TESCON No.1 / TESCON VANA
To tape membrane overlaps

Continue on page 5-8

... Application guide continues

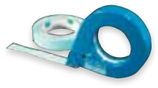
Connections in hips and valleys

In hips and valleys membranes are shiplapped from top to bottom (with staples under the overlaps. These overlaps should at a minimum extend to under the counter battens of the neighboring roof surface. Overlaps of these neighboring membranes should be at least 4"-6" /10–15 cm. The overlaps are then taped with all-around TESCON Vana / TESCON No.1. Alternatively the connections can be made with 6" / 15 cm wide TESCON Vana

In vented roofs (not fully insulated, not recommended), roof vents shall be used. SOLITEX membrane shall end 2" / 5 cm below the hip/top of the roof and be covered by a roof vent

Gutter connection

DUPLEX
Double sided tape suitable for butt joints and overlaps



DUPLEX tool
For easy and quick application of pro clima DUPLEX (20m roll). Application and cutting tape with one hand.

SOLITEX subroofs shall be connected to the gutters. Membrane to extend into the gutter or flashing. It shall be fixed without creases with TESCON Vana/No.1 or DUPLEX so water will drain away and membrane is premantely secured.

Connection to other building materials (plaster, brick, woodfiber)

To connect to uneven surfaces use the adhesive CONTEGA HF The adhesive should be applied in an approximately 1/4" / 5mm wide continous bead. If surface is very rough a wider bead would be required.
SOLITEX MENTO membrane, if possible not completely taut to allow buidling movement, is pressed into the adhesive. Do not press the adhesive completely flat! Both these aspects will allow this connection to withstand construction movement.

Solid substates in general do not require a clamping strip. Unstable/sanding materials do require a clamping strip.

Penetrations

SOLITEX MENTO membrane are connected to smooth surfaces (skylights, chimneys, pipes and other penetrations) with the all-around waterproof Pro Clima tapes TESCON Vana or TESCON No.1. Smooth mineral based materials (woodfibre board, rough OSB, brick) should be primed with TESCON PRIMER RP before application to enhance adhesion.

A subroof gutter above a roof obstruction (chimney, skylight etc) is made with a pitched batten. This batten is taped with TESCON Vana or TESCON No.1 on the subroof membrane. The pitch of this taped continious batten shall direct all rainwater to an roof area without obstructions.

Construction of a waterproof subroof

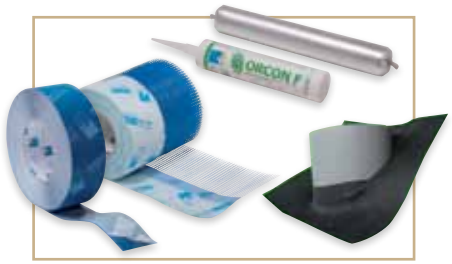
To create a completely rain- and waterproof subroof, one should apply the nail/screw sealing double sided Butyl tape TESCON NAIDEC in between the vertical battens and the SOLITEX MENTO membrane. This is recommended for all roof pitches, but especially important for lower pichtes (less than 20 degrees or 6/12 pitch) or when using SOLITEX Mento Plus as a sarking membrane/blow-in insulation mesh.

TESCON NAIDEC
Nail/screw sealing tape

Complimentairy Systems for the
Optimization of the enclosure

Maximum protection – INTELLO system

Vapor variable and airtight membrane – INTELLO system
Optimal protecting against structural damage and mold – also suitable for Building physically challenging assemblies.
Vapor variable: Perm rating 0.17 to 13.2
s_d-value 0,25 to >10 m.



Secure connections and easy solutions

- All-around tapes and adhesives for interior and exterior
- Plaster connection tapes
- Cable and pipe collars

For case studies, field notes and news visit

www.proclima.de
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Information and orders

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