



EVALON®Waterproofing
Membranes



The ultimate flat-roofing system

The alwitra roofing system



EVALON® waterproofing membranes are part of the proven alwitra roofing system. This system comprises:

- waterproofing membranes
- 2 3 4 5 6 7 7 8 9 10 11 12 **EVALON® Solar: PV system integrated in the waterproofing membrane**
 - SOLYNDRA® Solar: PV system mounted on the waterproofing membrane
- coated metal sheets
- roof edge trim profiles incl. colour coating
- wall flashing profiles incl. colour coating
- wall capping profiles incl. colour coating
- colour coatings
- rooflights and natural smoke vent systems
- paving slab supports
- flat roof vents
 - rainwater outlets



Perfect Solutions for Flat Roofs





Ice skating rink, Erfurt, Germany

Esplanade Theatres on the Bay, Singapore





Dornier Museum, Friedrichshafen, Germany

Pneuhage central storage, Speyer, Germany

alwitra is the expert when it comes to waterproofing flat and low sloped roofs. With a system of integrated components and many years of experience and knowhow, we are offering perfect solutions for new build and roof refurbishment. Flat roofing expertise is also demonstrated in the way in which alwitra cares about its clients. One of the industry's largest teams of expert consultants always keeps in personal touch with clients on site. Working together, individual flat roofing solutions are developed to ensure long lasting performance.

Positive proof:

alwitra EVALON® waterproofing membranes

For almost four decades, alwitra has been specialising on the production of light-coloured and white synthetic waterproofing membranes. Because light-coloured waterproofing membranes have a special advantage: the lighter the colour, the more heat rays it reflects. This will minimise the temperature increase within the building.

Latest surveys showed very high reflectivity characteristics for new white EVALON® waterproofing membranes. Moreover, white EVALON® waterproofing membranes make an ideal match for the unique pho-

tovoltaic system SOLYNDRA® Solar. As SOLYNDRA® Solar also turns radiation reflected by the roof surface into power, you will benefit from the extremely high reflexivity characteristics of white EVALON® waterproofing membranes, tried and tested for decades.

A superior synthetic waterproofing membrane with optimum properties, combining more than 45 years of competence and flat roof experience. Worldwide, over 140 million square metres of flat roofs have now been effectively and reliably covered with alwitra waterproofing membranes. This area increases by several million square metres every year.

Top quality – ensured by national and international testing as well as in-house and external control

•	Staatliche Materialprüfungsanstalt (MPA), Darmstadt, Germany	External quality control Certificate of conformity according to DIN EN 13956 and DIN EN 13967
•	TÜV Rheinland Group, Cologne, Germany	Comprehensive external quality control of the product system
•	Gesellschaft für Materialforschung und Prüfanstalt für das Bauwesen (MFPA), Leipzig (Germany) Warringtonfire Gent (Belgium) Exova Warringtonfire (United Kingdom)	Tests with General Building Construction Supervision Test Certificate (AbP) according to DIN 4102-7 (resistance to flying sparks and radiant heat) as well as DIN V ENV 1187 Test methods 1, 3, 4 (external fire load) with classification according to DIN EN 13501-5 Tests according to DIN 4102-1 (building material class B2) and DIN EN 11925-2 with classification according to DIN EN 13501-1 (class E)
•	Deutsches Institut für Bautechnik (DIBt), Berlin, Germany	European approval ETA-08/0112 (ETAG 006)
•	Landwirtschaftskammer Rheinland, Lehr- und Versuchs- anstalt für Garten und Landschaftsbau, Essen, Germany Forschungsanstalt, Fachgebiet Landschaftsbau, Geisenheim, Germany	Testing according to FLL 84 (root penetration resistance) Testing according to FLL 99 (root/rhizome penetration resistance)
•	British Board of Agrément (BBA), Garsten/Watford, UK	Tests according to Building Standards Regulations (England, Wales and Scotland), Certificate No. 96/3293
•	DEKRA Construction (NORISKO), Paris, France CSTB, Marne-la-Vallée, France	Cahier des Clauses Techniques Avis Technique CSTB 21/09-05, DTA CSTB 5/07-1957
•	Factory Mutual, Norwood, USA	FM-Approval, Class 4470



Airport Bordeaux-Mérignac, Bordeaux, France



Fort Regent Leisure Centre, Jersey, Channel Islands



Cathedral, Coronel, Brazil



Indoor family playground "Willi, the Whale", Friedrichskoog, Germany



EVALON® waterproofing membranes

C€ marking 1343 - BPR - 06-1432

EVALON® waterproofing membranes are superior quality EVA membranes according to DIN 18531-2 (respectively DIN V 20000-201) and DIN 18195-2 (respectively DIN V 20000-202) for single-ply waterproofing of all types of flat roof constructions and application methods as well as for waterproofing of foundations. Product and system tests are carried out according to the

require-ments of the European standards DIN EN 13956 and DIN EN 13967 and provide for the basis and the entitlement to CE marking.

EVALON® membranes consist of a high polymer alloy of ethylene vinyl acetate terpolymer (EVA) and polyvinyl chloride (PVC), a purpose-made thermoplastic material. Both components are solids and remain unchanged over time. Thus, physical properties remain unaltered and optimum life expectancy is assured.

The material is calendered to homogeneous soft and elastic membranes and also provided with various backings, depending on application specifics.

EVALON ®	EVALON® V	EVALON® VG	EVALON® VSK	EVALON® VGSK
unbacked	with polyester fleece backing	with glass/polyester fleece backing	with polyester fleece backing and self- adhesive coating	with glass/polyester fleece backing and self-adhesive coating
loose laid with ballast	loose laid, with ballast, mechanically fastened, bonded	with integrated fire protection layer, mechani- cally fastened, directly on unbacked rigid poly- styrene foam boards	bonded	with integrated fire protection layer, bonded, directly on unbacked rigid poly- styrene foam boards
				5

Quick, simple and economical installation

FVALON®	economical	durable
EVALUN	for new build and	safe
The ultimate flat-roofing system	refurbishment	reliable

EVALON® waterproofing membranes

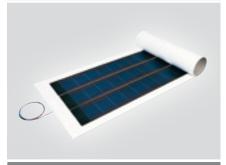
- are superior quality synthetic waterproofing membranes for single-ply waterproofing.
- are homogeneous, soft, flexible with an extremely high percentage of high polymer solids.
- have a light-coloured smooth surface which does not retain dirt and promotes good solar reflectivity.
- offer excellent thermal and mechanical properties due to high strength combined with substantial elongation.
- are resistant to damaging radiation without protective coating. Suitable for use under wear layers (walkways, driveways and roof gardens).
- are tested to external fire loads or resistance to sparks and radiant heat (hard roofing).
 The fire load is five times lower than that of built-up felt roofing.
- are resistant to general chemical environmental impact.
- are **resistant to root/rhizome penetration** according to FLL testing and can be applied on green roofs without any additional root protection layer.
- are **compatible with bitumen** and can be directly applied on all standard bituminous layers and insulation materials including rigid polystyrene foam boards, depending on the approved roof build-up (hard roofing).
- have an extremely low vapour diffusion resistance, allowing moisture to escape from the roof build-up all over the whole membrane surface.
- are available in a range of colours, at a width of up to 2.05 m with a standard length of 25 m (special lengths on request), i. e. up to 50 m² of seamless waterproofing, providing optimum waterproofing solutions for each roof shape and application method.
- are suitable for all application methods and flat roof configurations (unbacked, with polyester fleece or glass / polyester fleece backing or with self-adhesive coating on underside).
- are easy and quick to install by homogeneous hot-air or solvent welding in the overlap area.
- can be recycled.



St. Catherine's School, Hereford, United Kingdom



Toskana Thermal Spa, Bad Sulza, Germany



EVALON® Solar is the world's first power generating waterproofing membrane



Application examples	Waterproofing membranes, loose laid with ballast	Waterproofing membranes, mechanically fastened	Waterproofing membranes, bonded
	gravel, roof garden, concrete paving slabs	in the seam overlap or with field fastening	with cold or hot-melt adhesives
non ventilated roofs (warm deck roofs)	EVALON® V depending on the purpose and the condition, especially roughness of the substrate	EVALON® V EVALON® VG EVALON® Solar depending on the building material class of the insulation material and on the approved roof build-up e. g. EVALON® VG on unbacked rigid polystyrene foam boards without separation and fire protection layer	EVALON® V EVALON® VSK EVALON® VGSK on thermal insulation materials with backing or fire protection layer, depending on the approved roof build-up directly on the bituminous waterproofing to be refur- bished or self-adhesive EVALON® VGSK, directly bonded to unbacked rigid polystyrene foam boards
ventilated (two layer) roofs (cold deck roofs)	EVALON® EVALON® V depending on the condition, especially roughness of the substrate	EVALON® V EVALON® VG depending on the building material class of the upper layer and on the approved roof build-up	EVALON® V EVALON® VSK on a non-combustible upper layer or fire protection layer, depending on the approved roof build-up
inverted roofs / DUO roofs	EVALON® EVALON® V depending on the condition, especially roughness of the substrate		

More than 10 years ago alwitra recognised the significance of renewable energies and began to integrate photovoltaic systems into building structures. The objective of using the enormous potential of empty roof area to generate power from sunlight was realised in 1999 with the development of the world's first multipurpose waterproofing membrane with integrated solar modules. EVALON® Solar combines the latest technology in roof waterproofing with options for generating solar energy.



Waterproofing with the world's first roof integrated PV waterproofing membrane EVALON® Solar (Multipurpose Arena HOVET, Stockholm, Sweden)

Excerpt Tests according to DIN EN 13956 and DIN EN 13967			EVALON® unbacked	EVALON® V with polyester fleece backing	EVALON® VG with glass/ polyester fleece backing
Properties	Testing method	Unit	Result ^a	Result ^a	Result ^a
Visible defects	EN 1850-2			passed	
Effective thickness (e _{eff}) of the waterproofing	EN 1849-2	mm		1.2/1.5	
Water tightness	EN 1928 method B	kPa		≥ 400	
External fire performance	ENV 1187		Resistant to sparks a Construc	class B _{ROOF} (t1) + (t4) b nd radiant heat, confirme tion Supervision Test Cer	ed by General Buildin tificates ^b
Reaction to fire	EN 13501-1			class E	
Joint peel resistance	EN 12316-2	N/50 mm		≥ 80	
Joint shear resistance	EN 12317-2	N/50 mm		≥200	
Tensile strength		N/mm²	≥ 12.5		
Max. tensile force	EN 12311-2	N/50 mm		≥ 500	≥ 500
Elongation at break		%	≥ 300		
Elongation at max. tensile force	EN 12311-2	%		≥ 60	≥ 60
Resistance to impact load	EN 12691 method A	mm		≥ 300	
Resistance to static load	EN 12730 method B	kg		≥ 20	
Tear resistance	EN 12310-1 EN 12310-2	N N		≥ 80 ≥ 80	
Resistance to root penetration	EN 13948		passed	passed ^c	passed ^c
Dimensional stability	EN 1107-2	%	≤ 2	≤ 1	≤ 1
Low temperature flexibility	EN 495-5	°C		≤ -25	
Durability (UV exposure, high temperatures and water)	EN 1297	visual control		passed	
Durability of water tightness against artificial ageing	EN 1296 EN 1928	kPa		≥ 60	
Durability of water tightness against chemicals incl. water	EN 1847 EN 1928	kPa		≥ 60	
Hail resistance	EN 16583	m/s		≥ 30	
Water vapour permeability	EN 1931	μ		approx. 20,000	
Bitumen compatibility	EN 1548			passed	

The results contained in this document are taken from tests and comply with the current standards as of 03/2010. Normal tolerances apply.



Product Range				
	EVALON® waterproofing membranes	EVALON® V waterproofing membranes	EVALON® VG waterproofing membranes	
Membrane thickness excluding backing (mm)	1.2/1.5 1	1.2/1.5 1	1.2/1.5 1	
Membrane widths (m) • with welding edge on one side • with welding edge on both sides	1.05/1.55/2.00	1.05/1.55/2.05 1.09/1.59	1.05/1.55 1.09/1.59	
Tape widths (cm)	10/16/20/25/33/50/66/75	54/79	54/79	
Standard length (m)	25	25	25	
Special lengths	on request	on request	on request	
Standard colours	white/light grey/ slate grey	white/light grey/ slate grey	white/light grey/ slate grey	
Special colours	on request	on request	on request	
EVALON® preformed parts • Internal corners • External corners • Expansion joint tape • Connecting flanges ²	•	•	•	
EVALON® coated metal sheet (sheets 1 m x 2 m) (coils 30 m x 1 m)	white/light grey/slate grey white/light grey	white/light grey/slate grey white/light grey	white/light grey/slate grey white/light grey	
EVALON® VSKA tape with self-adhesive coating on underside Length (m) Widths (cm) • with welding edge on one side • with welding edge on both sides	25 33/43/63 66/86/126	25 33/43/63 66/86/126	25 33/43/63 66/86/126	
ADHESIVES • alwitra L 40 • alwitra PUR D	• 3	•	•	
alwitra solvent welding agent	•	•	•	
EVALON® liquid	•	•	•	
¹ other thicknesses on request				

Self-adhesive waterproofing membranes EVALON® VSK/VGSK



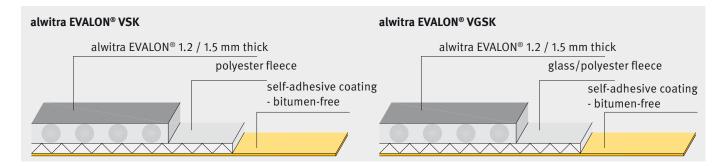
The fleece-backed synthetic waterproofing membrane with bitumen-free self-adhesive coating



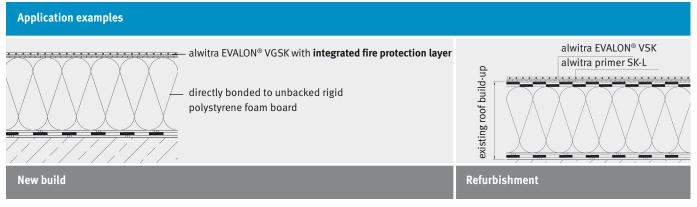
- with self-adhesive underside coating bitumen-free and solvent-free
- optimal vapour pressure compensation function of the polyester fleece backing
- allows diffusion even with selfadhesive coating
- high adhesive strength
 the self-adhesive coating adheres to many standard building substrates

- efficient laying no adhesive to be applied – fast and safe
- ideal also for steep slope roof areas (e. g. shed or arched roofs) time-saving and clean laying
- white and light-coloured selfadhesive membranes
 heat ray reflecting
- no fire hazard cold bonded application without open flame

EVALON® VSK/VGSK waterproofing membranes are based on our long-term proven EVALON® waterproofing membranes. Additionally, the membranes have a polyester fleece (VSK) or glass/polyester fleece (VGSK) backing and a synthetic adhesive compound coating. After laying, the fleece backing also reduces stress and strain on the system (vapour decompression, movement compensation, etc.). The coating is bitumen-free and solvent-free and covered with a protective film when delivered. Product and system audits are carried out according to the requirements of the European standards DIN EN 13956 and DIN EN 13967 and provide the basis for the entitlement to CE marking.



EVALON® VSK and **VGSK** waterproofing membranes are 25 m long, 1.05 m wide and produced with a non-coated welding edge on one side. Thus, a homogenous welding in the seam area is guaranteed.





EVALON® and SOLYNDRA® Solar:

The ideal combination for high power yield

The innovative SOLYNDRA® system has been specially developed to optimise PV performance on low slope roofs with highly reflective surfaces.

The patented SOLYNDRA® solar module consists of cylinders that capture solar radiation all across their surface offering two key advantages:

- 1. The diurnal cycle of the sun is optimally utilised, like in a tracking PV system.
- 2. Additionally, reflected radiation from the roof surface is converted into electrical power.

Therefore, the optimal solution is to combine this innovative PV system with the long tried and tested white waterproofing membrane EVALON® from alwitra, which has higher reflection values in relation to other waterproofing membranes and reflects incident solar radiation from the roof surface. The yield of the SOLYNDRA® PV system will be increased by up to 20 %.

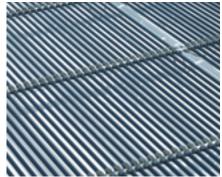
The reflectivity depends on the location of the building as well as from characteristics of the roof area (e. g. slope). Regular maintenance/cleaning of the roof area is a prerequisite for highest possible reflectivity.

Even after years, the white EVALON® waterproofing membranes normally feature surpassing reflectivity and significantly contribute to the total yield of the PV system.



An optimised system: EVALON®, panel mounts, SOLYNDRA® Solar







Germany's largest PV system with EVALON® and SOLYNDRA® Solar (Parts Europe, Wasserliesch, Germany)

Technical Data EVALON® VSK and VGSK waterproofing membranes, self-adhesive

Excerpt Tests according to DIN EN 13956 and	DIN EN 13967	EVALON® VSK	EVALON® VGSK	
Properties	Testing method	Unit	Res	ult ^a
Visible defects	EN 1850-2		pas	ssed
Effective thickness (e_{eff}) of the waterproofing	EN 1849-2	mm	1.2	/1.5
Water tightness	EN 1928 method B	kPa	≥ ∆	400
External fire performance	ENV 1187		class B _{ROOF} confirmed by General Building Certifi	(t1) + (t4) b g Construction Supervision Test cates b
Reaction to fire	EN 13501-1		cla	ss E
Joint peel resistance	EN 12316-2	N/50 mm	≥	80
Joint shear resistance	EN 12317-2	N/50 mm	≥ 2	200
Max. tensile force	EN 12311-2	N/50 mm	≥ 5	500
Elongation at max. tensile force	EN 12311-2	%	2	60
Resistance to impact load ^c	EN 12691 method A	mm	≥ 3	300
Resistance to static load ^c	EN 12730 method B	kg	5	20
Tear resistance	EN 12310-2	N	2	80
Resistance to root penetration ^d	EN 13948		pas	ssed
Dimensional stability	EN 1107-2	%	≤	:1
Low temperature flexibility	EN 495-5	°C	≤ :	-25
Durability (UV exposure, high temperatures and water) ^c	EN 1297	visual control	pas	ssed
Durability of water tightness against artificial ageing ^c	EN 1296 EN 1928	kPa	2	60
Durability of water tightness against chemicals incl. water ^c	EN 1847 EN 1928	kPa	2	60
Hail resistance ^c	EN 13583	m/s	>	30
Water vapour permeability ^d	EN 1931	μ	approx	. 20,000
Bitumen compatibility ^c	EN 1548		pas	ssed

Information for the applicator

The technical data comply with the current standards (03/2010). Normal tolerances apply.

^a Minimum requirements without specified tolerances

^c Homogeneous sealing layer identical with the product EVALON®

^b Valid for the respective tested build-up ^d Sealing layer and seam weld identical with the product EVALON®



Supply specification EVALON® VSK/VGSK		
Thickness (mm) (without backing and self-adhesive coating)	1.2 / 1.5	
Width (m)	1.05	
Length (m)	25	
Standard colours	white/light grey/slate grey	
Special colours	on request	

Specification alwitra primer EVALON® VSK		
alwitra primer SK-L		
Base	SBS rubber, solvent-containing	
Consistency	liquid, rollable and brushable	
Colour red Containers 10 L / 25 L		

EVALON® VSK

Synthetic waterproofing membrane with polyester fleece backing (PV) and bitumen-free and solvent-free self-adhesive coating.

EVALON® VGSK

Synthetic waterproofing membrane with glass/polyester fleece backing (GV/PV) and bitumen-free and solvent-free self-adhesive coating. With integrated fire protection layer.

EVALON® VSK and VGSK

The waterproofing with reliable and efficient self-adhesive technique

- optimal vapour pressure compensation function of the polyester fleece or glass/polyester fleece backing
- ideal also for steep slope roof areas
- no fire hazard bonded without open flame

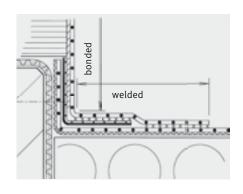
EVALON® VSKA

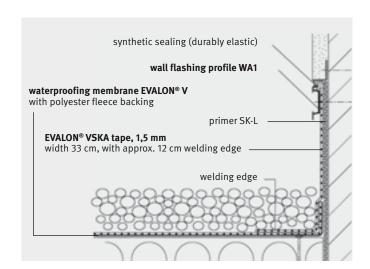
The self-adhesive tape



Application

Adhesive-free and windproof flashing and sealing with EVALON® waterproofing membranes. The underside coating of the **VSKA** tapes will adhere to various substrates at the roof perimeter and wall flashing area, e. g. timber, concrete, bituminous felt, brick work, zinc and steel sheets, aluminium, but also to various synthetic materials, e. g. rooflight upstands made of polyester and other synthetic materials or built-in details made of polyvinyl chloride (PVC), polypropylene (PP), etc.





Width	Length	Characteristics
66 / 86 / 126 cm	25 m	central underside coating with uncoated welding edge (approx. 12 cm) on both sides
33 / 43 / 63 cm	25 m	underside coating with uncoated welding edge (approx. 12 cm) on one side
Installation temperature		from +5 °C to +40 °C
Temperature stability		from -30 °C to +80 °C
Storage		in a dry and cool place

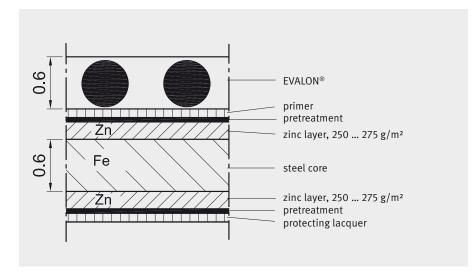
Coated metal sheets



alwitra coated metal sheets are galvanized, coil-coated thin sheets. The **duplex coating** on both sides, i. e.

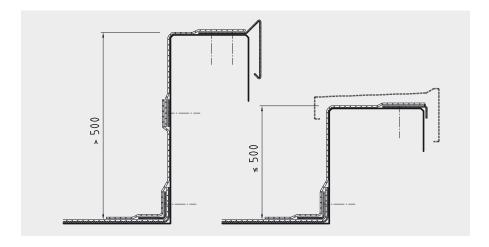
- EVALON® (white, light grey or slate grey) on the upper side
- zinc layer and organic protecting lacquer on the lower side

provides for optimal corrosion protection. The zinc layer prevents corrosion below the coating, the coating prevents abrasion of the zinc layer. Practice has shown that corrosion resistance of a duplex coating is 1.2 ... 2.5 times higher than the total of the individual protection of the zinc layer and the coating (synergetic effect).



The sheared edges of EVALON® coated metal sheets are also corrosion-protected because of the **cathodic protection effect**. When the zinc layer and the steel core get into electroconductive contact via electrolyte (humidity, precipitation), a galvanic element is formed. The baser metal zinc "dissolves", migration of ions from the zinc to the steel occurs. The bare sheared edges are protected against corrosion. Temporarily, i. e. until the formation of the protection layer, the surfaces may change colour.

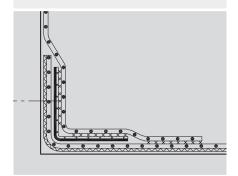
For special purposes, stainless EVALON® coated metal sheets are available on request.



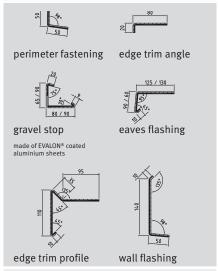
Parapets can be waterproofed with loose laid membranes that are welded to mechanically fastened coated metal sheets. Intermediate fixing of the membrane will be necessary for parapet heights over 50 cm. The sealing can be formed with coated metal angles (blank approx. 20 cm, triple bend).

EVALON® coated metal sheets are delivered on pallets in sheets of 1 x 2 m* ex works. They must be stored horizontally on a dry and plain area. They are to be processed (cutting, bending) at room temperature (approx. 18 °C). The coated metal sheets should be cut with sharp tools with the protecting lacquer coating up. The cutting clearance should be 0.03 to 0.04 mm.

* greater lengths on request



EVALON® coated metal sheets can be bent on any standard sheet metal bending machine. The bending radius should be min. 1.2 - 1.8 mm. Coated metal angles are to be bent with an angle which is approx. 8° wider than the required angle, so the angle legs will fit closely to the substrate when fastened.



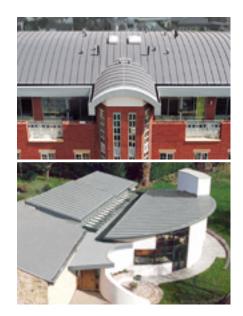
Coated metals sheets are to be fastened with non-corrosive screws or other suitable fastening elements.

EVALON® standing seam profile

Structure on your roof – as easy as this

The application of EVALON® standing seam profiles is as easy and safe as for all alwitra waterproofing membranes. Both waterproofing membrane and profile perfectly adjust to the given roof structure.

Structuring is also possible on lowsloped roof areas. This is, where other waterproofing types meet their limits. Upon request, the EVALON® standing seam profile may also be retrofitted.



Product description

The EVALON® standing seam profile is an extruded hollow profile.

Length: 2 m

Colour: light grey, slate grey,

other colours on request

Packing unit: 90 m/cardboard box, (dowel pins for profile connection

enclosed)

Installation: with EVALON® liquid or hot air

Application instructions

Installation preferably from the ridge to the eaves.

Profiles are normally placed on the seam, for a narrower spacing e.g. in the membrane centre.

EVALON® inspection walkway tiles



EVALON® inspection walkway tiles are used to protect the waterproofing and to mark the maintenance walkways on flat roofs covered with EVALON®.

The textured surface provides a strong grip, even on sloped and wet areas. Moreover, the tiles also provide for load distribution.

2. Material

Analogue to EVALON® waterproofing membranes, UV and weather resistant.



3. Product design

Colour	dark grey; slight differences in colour possible
Surface	textured
Texture height	approx. 4 mm
Underside	even

4. Dimensions

Length x width	approx. 80 cm x 60 cm
Total thickness	approx. 9 mm
Weight	approx. 8 kg/m ² respectively approx. 3.7 kg/tile
Available forms	100 un./pallet respectively 48 m²/ pallet
Others	slide prevention and load distribution

5. Installation

The inspection walkway tiles are hot-air welded (e.g. hot-air welding machine) to newly installed, clean and dry roof areas with EVALON® waterproofing membranes. Stable connection on roofs with a slope of up to approx. 5° can also be achieved by using EVALON® liquid. It is recommended to install the tiles with a joint spacing of ±5 cm. On older and soiled roof surfaces the welding areas must be cleaned thoroughly with alwitra cleaner for waterproofing membranes.

No additional measures for ensuring position stability required.





alwitra. Die Dachmarke

alwitra. Die Dachmarke: specialised on innovative solutions for flat roofs for more than 45 years, whether for new architectural ideas or for historic buildings. The product range comprises all components for the water-bearing roof level, perfectly integrated and from one single source. By developing our superior waterproofing membranes EVALON® and EVALASTIC® we have redefined the concept of durability and flexible application. Furthermore, alwitra clients can rely on the competent support from our Technical Service and one of the world's most comprehensive partner networks for flat roofs. The integrated alwitra management system has been certified by TÜV according to DIN EN ISO 9001 - Quality Management Systems – and DIN EN ISO 14001 - Environmental Management Systems.



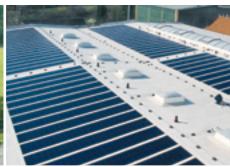








NTU University, Singapore



FKT Plastics Company, Triptis, Germany

