

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

**ETA-08/0112
of 10 April 2018**

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

EVALON®

Product family
to which the construction product belongs

System of mechanically fastened roof waterproofing
membranes

Manufacturer

alwitra GmbH & Co. Klaus Göbel
Am Forst 1
54296 Trier
DEUTSCHLAND

Manufacturing plant

CTW Chemotechnisches Werk GmbH & Co.
Hermeskeil KG
Gewerbegebiet Grafenwald
54411 Hermeskeil
DEUTSCHLAND

This European Technical Assessment
contains

19 pages including 11 annexes which form an integral
part of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

ETAG 006,
used as EAD according to Article 66 Paragraph 3 of
Regulation (EU) No 305/2011.

This version replaces

ETA-08/0112 issued on 7 May 2013

European Technical Assessment

ETA-08/0112

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Specific part

1 Technical description of the product

1.1 Definition of the construction product

The mechanical fastened flexible roof waterproofing kit "EVALON®" consists of different flexible waterproofing sheets on the basis of Ethylen-Vinylacetat-Terpolymer (EVA) / Poly-Vinyl-Chlorine (PVC), clad with polyester fleece or a fiberglass/polyester fleece or with an internal synthetic reinforcement scrim and sets of fasteners and washers.

The waterproofing sheets are compatible with bitumen.

The kit with the components waterproofing sheet, fastener and washer can be assembled of for creating the mechanically fastened one layer roof waterproofing system. Cover stripes and cover pieces are cut from sheet material.

The insulation material is not part of the kit.

The system build-up is given in Annex A1.

1.1.1 Waterproofing sheet

The waterproofing sheets "EVALON® V", "EVALON® VG" and "EVALON® dual" are CE-marked according EN 13956.

The waterproofing sheets "EVALON® V" and "EVALON® VG" are delivered in rolls with a maximum length of 25 meters. These waterproofing sheets are available in various widths. The maximum width is 2.05 meters.

The waterproofing sheets "EVALON® dual" are delivered in rolls with a maximum length of 20 meters and are also available in various widths. The maximum width is 1.50 meters.

The manufacturers declared value of the effective thickness of the waterproofing layer is 1.2 mm or 1.5 mm for "EVALON® V" and "EVALON® VG". The waterproofing layer can be clad with polyester fleece or glass fibre/polyester fleece. The effective layer thickness of "EVALON® dual" is 1.5 mm, this include a central synthetic reinforcement scrim.

The joints overlap of the waterproofing sheet shall be welded with hot air or with solvent with minimum width of 20 mm respectively 30 mm.

The minimum of the joint overlap is 110 mm.

Table 1 gives the general description of the flexible waterproofing sheets. The accompanying mechanical characteristics are stated in the Annex A2.

Table 1: Waterproofing sheets

Membrane	Cladding/Backing layer [g/m²]	effective thickness of waterproofing layer without backing [mm]	Mass per unit area [g/m²]
EVALON® V	polyester fleece approx. 160	1.5	$1950 \leq F_g \leq 2250$
		1.2	$1600 \leq F_g \leq 1850$
EVALON® VG	with glass/polyester fleece approx. 210	1.5	$2000 \leq F_g \leq 2300$
		1.2	$1650 \leq F_g \leq 1900$
EVALON® dual	polyester fleece approx. 85-115	1.5	$1750 \leq F_g \leq 2035$

1.1.2 Fasteners, washers

The fasteners can be used from manufacturer EJOT according to ETA-07/0013, the manufacturer ETANCO according to ETA-08/0239, the manufacturer SFS intec according to ETA-08/0262 and from the manufacturer Zahn according to ETA-08/0033. The fasteners are CE-marked on the basis of the relevant ETAs.

The different fasteners are stated in table 2.

Table 2: Fasteners and washers

Trade name	Type	Nature	Geometry
EJOT Dabo TKR-4,8 x L	screw	coated carbon steel	4,8 x L mm
EJOT Dabo TKE-4,8 x L	screw	stainless steel	4,8 x L mm
EJOT Dabo SW8 RT-4,8 x L	screw	coated carbon steel	4,8 x L mm
EJOT Dabo SW8 ET-4,8 x L	screw	stainless steel	4,8 x L mm
EJOT Dabo VHT R-4,8 x L	screw	coated carbon steel	4,8 x L mm
EJOT Dabo VHT E-4,8 x L	screw	stainless steel	4,8 x L mm
EJOT FBS-R-6,3 x L	screw	coated carbon steel	6,3 x L mm
EJOT JBS- R-7,5 x L	screw	coated carbon steel	7,5 x L mm
EJOT FPS-E-8,0 x L	screw	stainless steel	8,0 x L mm
EJOT FDDplus S 50 x L - R	anchor	coated carbon steel	8,0 x L mm
EJOT FDDplus 50 x L - R	anchor	coated carbon steel	8,0 x L mm
EJOT FDDplus 50 x L - E	anchor	stainless steel	8,0 x L mm
EJOT HTV RU 40 x L W	washer	coated carbon steel	ø 40 mm
	screw		5,3 x L mm
ETANCO EHB DF 2C	screw	coated carbon steel	4,8 x L mm
ETANCO EGB 2C	screw	coated carbon steel	4,8 x L mm
ETANCO BETOFAST TH DF 3C	screw	coated carbon steel	6,6 x L mm
ETANCO BETOFAST TB TX 3C	screw	coated carbon steel	6,6 x L mm
ETANCO MULTIFAST TB DF INOX A2	screw	stainless steel A2	6,0 x L mm
ETANCO MULTIFAST TB INOX A2	screw	stainless steel A2	6,0 x L mm
ETANCO ISODRILL TH DF	screw	stainless steel A4	4,8 x L mm
ETANCO ISODRILL TT	screw	stainless steel A4	4,8 x L mm
ETANCO FASTOVIS 3036 TF DF 2C	screw	coated carbon steel	6,5 x L mm
ETANCO FASTOVIS 3036 TF 2C	screw	coated carbon steel	6,5 x L mm
SFS IR2-4.8 x L	screw	coated carbon steel	4,8 x L mm
SFS IR2-S-4.8 x L	screw	stainless steel	4,8 x L mm
SFS IR2-C-4.8 x L	screw	coated carbon steel	4,8 x L mm
SFS IR3-4.8 x L	screw	coated carbon steel	4,8 x L mm
SFS IR3-S-4.8 x L	screw	stainless steel	4,8 x L mm
SFS DT-4.8 x L	anchor	coated carbon steel	4,8 x L mm
SFS DT-S-4.8 x L	anchor	stainless steel	4,8 x L mm
SFS DT-6,3 x L	anchor	coated carbon steel	6,3 x L mm
SFS DT-S-6,3 x L	anchor	stainless steel	6,3 x L mm

Trade name	Type	Nature	Geometry
SFS IW-T-5.0 x L	screw	coated carbon steel	5,0 x L mm
SFS IW-S-5.0 x L	screw	stainless steel	5,0 x L mm
SFS IWF-5.2 x L	screw	coated carbon steel	5,2 x L mm
SFS TPR-L- 6,3 x L	rivet	aluminium	6,3 x L mm
SFS BS-4,8 x L	screw	coated carbon steel	4,8 x L mm
SFS BS-S-4,8 x L	screw	stainless steel	4,8 x L mm
SFS BS3-4,8 x L	screw	coated carbon steel	4,8 x L mm
SFS LBS-S-T25-8,0 x L	screw	stainless steel	8,0 x L mm
SFS FB-S-T25-7,5 x L	screw	stainless steel	7,5 x L mm
SFS TI-6,3 x L	screw	coated carbon steel	6,3 x L mm
SFS TI-T25-6,3 x L	screw	coated carbon steel	6,3 x L mm
Zahn ZHBK	screw	carbon steel, specially corrosion- protected	4,8 x L mm
Zahn ZGBK-E	screw	stainless steel	6,0 x L mm
Zahn ZKSK-R	washer	Polyamid PA6	ø 50 mm x L mm
	screw	carbon steel, specially corrosion- protected	4,8 x L mm
Zahn ZHSK-R	washer	Polyamid PA6	ø 50 mm x L mm
	screw	carbon steel, specially corrosion- protected	4,8 x L mm
Zahn ZSDK-R	washer	Polyamid PA6	ø 50 mm x L mm
	screw	carbon steel, specially corrosion- protected	4,8 x L mm
Zahn ZTSD	washer	Polyamid PA6	40 x 80 mm
	screw	carbon steel, specially corrosion- protected	4,8 x L mm
Zahn ZKGK-E/R	washer	Polyamid PA6	ø 50 mm x L mm
	screw	stainless steel	6,0 x L mm

The different washers are stated in table 3.

Table 3: Washers

Trade name	Type	Nature	Geometry
EJOT HTK 2G	washers	polyethylene	ø 50 mm, L mm
EJOT EcoTek 50 x L	washers	polyethylene	ø 50 mm, L mm
EJOT HTV 82/40	washers	carbon steel, Aluzinc-coated	82 x 40 mm
EJOT HTE 82/40	washers	stainless steel	82 x 40 mm
EJOT HTV 82/40 TK	washers	carbon steel, Aluzinc-coated	82 x 40 mm
EJOT HTV 82/40 F	washers	carbon steel, Aluzinc-coated	82 x 40 mm

Trade name	Type	Nature	Geometry
ETANCO 82 x 40 R	washers	carbon steel, Aluzinc-coated	82 x 40 mm
ETANCO 82 x 40 R DF	washers	carbon steel, Aluzinc-coated	82 x 40 mm
ETANCOPLAST PP 50	washers	polypropylene	ø 50 mm, L mm
ETANCOPLAST HP 82 x 40	washers	polyamide	82 x 40 mm, L mm
ETANCOPLAST HP 40	washers	Polyamide	ø 40 mm, L mm
ETANCOPLAST HP6 82 x 40	washers	polyamide	82 x 40 mm, L mm
ETANCOPLAST HP6 40	washers	polyamide	ø 40 mm, L mm
SFS IR 82 x 40	washers	carbon steel, Aluzinc-coated	82 x 40 mm
SFS IRC/W 82 x 40	washers	carbon steel, Aluzinc-coated	82 x 40 mm
SFS IF/IG-C 82 x 40	washers	carbon steel, Aluzinc-coated	82 x 40 mm
SFS MW-40-FH	washers	carbon steel, Aluzinc-coated	ø 40 mm
SFS RP45 x L	washers	polypropylene	ø 43 mm
SFS R45 x L	washers	polypropylene	ø 45 mm
Zahn ZLVT 0015	washers	carbon steel, specially corrosion-protected	ø 50 mm
Zahn ZLVT 0005	washers	carbon steel, specially corrosion-protected	80 x 40 mm
Zahn ZLVT 0008	washers	carbon steel, specially corrosion-protected	80 x 40 mm

2 Specification of the intended use in accordance with the applicable European assessment Document

The mechanically fastened flexible roof waterproofing system "EVALON®" is intended to create a roof waterproofing for non-utilized roofs.

The roof waterproofing system can be installed on flat or sloped roofs to resist the passage of water to the building's internal structure. The possible substrates are specified sheet decks, concrete, aerated concrete or timber (see Annex A3/1 to A5/2).

In the manufacturer's technical documentation to this European technical assessment (ETA) the manufacturer gives information concerning the substrates which the mechanically waterproofing system is suitable for and how these substrates shall be pretreated.

The insulation material must be CE marked according to the relevant harmonized European standards and shall have a minimum stiffness as stated in annex A1.

The verifications and assessment methods on which this European Technical Assessment is based lead the assumption of working life of the mechanically fastened waterproofing system of 10 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

The performances given in Section 3 are only valid if the mechanically fastened flexible roof waterproofing membrane is used in compliance with the specifications and conditions given in Annex B1, B2 and in the specifications of the technical file of the manufacturer.

3 Performance of the product and references to the methods used for its assessment

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
reaction to fire	see Annex A2

3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Release of dangerous substances:	no performance assessed (npa)
watertightness peel resistance of joints shear resistance of joints tensile strength tensile elongation resistance against dynamic indentation resistance against static indentation resistance to tearing dimensional stability resistance to cold bending resistance to UV radiation resistance to hail water vapour transmission exposure to bitumen resistance to liquid chemicals including water root resistance Peel resistance after long term exposure to heat and water Shear resistance after long term exposure to heat and water Resistance to cold bending/folding after long term exposure to heat, UV-radiation, water and ozone	see Annex A2

3.3 Safety and accessibility (BWR 4)

Essential characteristic	Performance
Characteristic tensile loading Resistance to unwinding Resistance to corrosion of metallic fasteners Impact resistance and brittleness of plastic fasteners (before and after heat ageing) Requirements for results of Charpy tests for plastic materials (before and after heat ageing)	according to ETA-08/0262 resp. ETA-08/0285
Slipperiness	no performance assessed (npa)
Resistance to wind uplift	see Annex A3/1 to A5/2

3.4 General aspects

The verification of durability is part of testing the essential characteristics and by additional tests on the components membrane (see 3.2).

Durability is only ensured if the specifications of intended use according to Annex C are taken into account.

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to Decision of the Commission of 03. February 1998 (98/143/EC) (OJ L 42 of 14.02.1998, p. 58), the system of assessment and verification of constancy of performance (see Annex V and Article 65 Paragraph 2 to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use(s)	Level or class	System
Systems of mechanically fastened flexible roof waterproofing Membranes	For roof waterproofing	—	2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

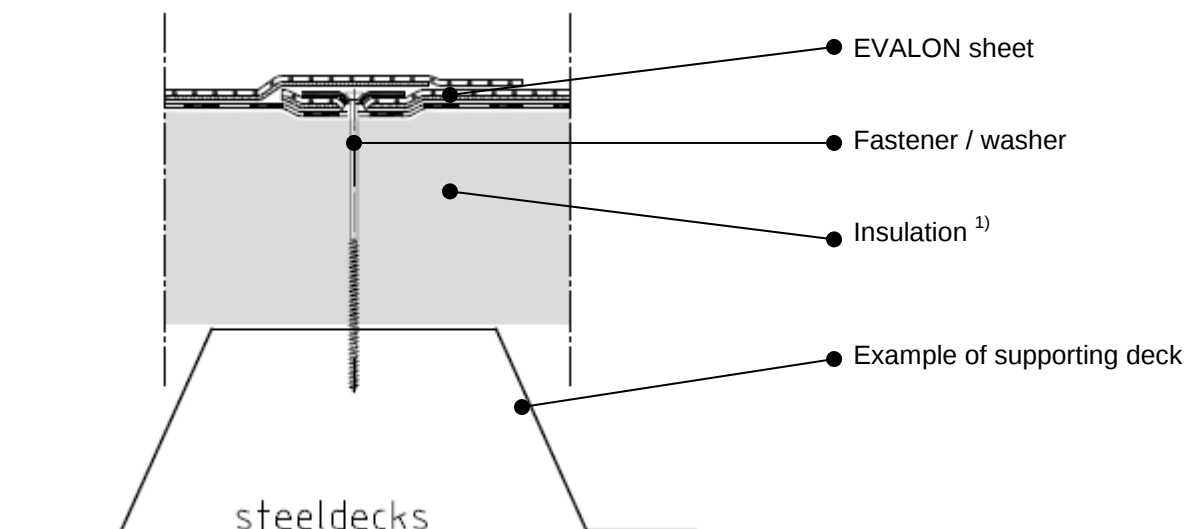
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 10. April 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Gnamou

System build-up of the roof waterproofing system "EVALON® V/ VG/ dual"



¹⁾ It shall be ensured that the insulation material on site has:

- a 10 % compression ≥ 60 kPa (EN 826)
- a point load behavior ≥ 500 Pa, deformation 5 mm (EN 12430)

The insulation material must be CE marked according to the relevant harmonized European standard.

Reaction to fire: Class E according to EN 13501-1

External fire performance of roofs: Class F_{ROOF} according to EN 13501-5

Information for users on external fire performance of roof decks:

According to declaration of performance of the sheets the classification B_{ROOF} (t1) and B_{ROOF} (t3) is only valid for supporting decks which are described in the classification documents according EN V 1187 and according EN 13501-5.

EVALON® V / VG / dual
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System build-up

Annex A1

Characteristic	Test method	Dimension	Value EVALON® VG	Value EVALON® V	Value EVALON® Dual
reaction to fire	EN 11925-2		class E	class E	class E
water tightness	EN 1928 test B	kPa	≥ 400	≥ 400	≥ 400
peel resistance of joints	EN 12316-2	N/50 mm	≥ 150	≥ 150	≥ 200 ⁴⁾
shear resistance of joints	EN 12317-2	N/50 mm	≥ 400	≥ 400	≥ 800 ⁴⁾
tensile strength	EN 12311-2	N/50 mm	≥ 500	≥ 500	≥ 1000
tensile elongation	EN 12311-2	%	≥ 60	≥ 60	≥ 15
resistance against dynamic indentation	EN 12691 test A	mm	≥ 300	≥ 300	≥ 600
resistance against static indentation	EN 12730 test B	kg	≥ 20	≥ 20	≥ 20
resistance to tearing	EN 12310-2	N	≥ 150	≥ 150	≥ 180
dimensional stability	EN 1107-2	%	≤ 1	≤ 1	≤ 1
resistance to cold bending	EN 495-5	°C	≤ -30	≤ -30	≤ -20
resistance to UV radiation	EN 1297	visible			
resistance to hail	EN 13583	m/s	≥ 30	≥ 30	≥ 30
water vapour transmission	EN 1931	μ	20000	20000	20000
exposure to bitumen	prEN 1584				
resistance to liquid chemicals including water	EN 1847				
root resistance	prEN 13948				
Resistance to heat ageing, EN 1296¹⁾					
peel resistance of joints ²⁾	EN 12316-2	%	Δ ≤ 20	Δ ≤ 20	Δ ≤ 20
shear resistance of joints ²⁾	EN 12317-2	%	Δ ≤ 20	Δ ≤ 20	Δ ≤ 20
resistance to tearing	EN 12310-2	%	Δ ≤ 20	Δ ≤ 20	Δ ≤ 20
resistance to cold bending	EN 495-5	°C	Δ ≤ 15	Δ ≤ 15	Δ ≤ 15
Resistance after long term exposure to heat UV (EN 1297)¹⁾					
resistance to cold bending	EN 495-5	°C	Δ ≤ 15	Δ ≤ 15	
Resistance to water					
peel resistance of joint	EN 12316-2	%	Δ ≤ 20	Δ ≤ 20	

- 1) These values are determined in accordance with ETAG 006.
2) Hot air welding.

EVALON® V / VG / dual
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Essential characteristics of the waterproofing sheets

Annex A2

Admissible wind load per fastener with waterproofing sheet EVALON® VG for different types of substrates										
Screw	Washer	Sheet deck			Timber				Concrete	Aerated concrete
		1	2	3	1	2	3	4	EN 206-1	EN 12602 EN 1520
W_{adm} [N]										
EJOT Dabo TKR/TKE (4.8xL)	HTK 2G 50 x L	600		600 ¹⁾	600					
EJOT Dabo VHT-R / VHT-E (4.8xL)	HTK 2G 50 x L	600		600 ¹⁾	600		-	-		
EJOT Dabo SW8 ET / -RT (4.8xL)	HTV 82/40	600		600 ¹⁾	600		-			
EJOT Dabo FBS-R (6.3 x L)	EcoTek 50 x L								500 ³⁾	
EJOT Dabo FBS-R (6.3 x L)	HTV 82/40 F								500 ³⁾	
EJOT Dabo JBS-R '(7,5 x L)	EcoTek 50 x L								500 ³⁾	
EJOT Dabo FPS-E (8.0 x L)	HTV 82/40 F									400 ⁹⁾
EJOT Dabo FPS-E (8.0 x L)	EcoTek 50 x L									400 ⁹⁾
EJOT FDDplus S 50xL	-								500 ³⁾	500 ³⁾
EJOT FDDplus 50xL -R / -E 50xL	-								500 ³⁾	500 ³⁾
ETANCO EHB DF 2C 2,5	Etanco 82x40 R DF	600			500					
ETANCO EGB 2C – 4,8 x L	ETANCOPLAST PP 50	500			500					
ETANCO EGB 2C – 4,8 x L	ETANCOPLAST HP 40	500								
ETANCO EGB 2C – 4,8 x L	ETANCOPLAST HP 82X40	500			500					
ETANCO FASTOVIS 3036 TF DF 2C	Etanco 82x40 R DF	500								
ETANCO BETOFAST TH DF 3C	Etanco 82x40 R								500 ⁵⁾	
ETANCO BETOFAST TB TX 3C	ETANCOPLAST HP6 40								500 ⁵⁾	
ETANCO MULTIFAST TB DF INOX A2	Etanco 82x40 R				500					400 ⁹⁾
ETANCO MULTIFAST TB INOX A2	ETANCOPLAST HP6 40				500					400 ⁹⁾

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Admissible loads per fastener

Annex A3/1

SFS IR2-4,8xL	IR 82x40	600			500		
SFS IR2-S-4,8xL	IR 82x40	600			500		
SFS IR2-C-4,8xL	IRC/W 82x40	600			500		
SFS IR3-4,8xL	IR 82x40	600					
SFS IR3-S-4,8xL	IR 82x40	600					
SFS IW-T-5,0 x L	IRC/W 82x40				500		
SFS IW-S-5,0 x L	IRC/W 82x40				500		
SFS IWF-5,2xL	MW-40-FH				500		
SFS DT-4,8xL	R45 x L					500 ²⁾	
SFS DT-S-4,8xL	R45 x L					500 ²⁾	
SFS DT-4,8xL	IF/IG-C 82x40					500 ²⁾	
SFS DT-S-4,8xL	IF/IG-C 82x40					500 ²⁾	
SFS DT-6,3xL	IF/IG-C 82x40					500 ⁴⁾	
SFS DT-S-6,3xL	IF/IG-C 82x40					500 ⁴⁾	
SFS TPR-L-6,3xL	IRD 82x40			400			
SFS BS-4,8xL	RP 45xL	600			500		
SFS BS-S-4,8xL	RP 45xL	600			500		
SFS BS3-4,8xL	RP 45xL		600				
SFS LBS-S-T25-8,0xL	R45 x L						400 ⁹⁾
SFS LBS-S-T25-8,0xL	IF/IG-C 82x40						400 ⁹⁾
SFS FB-S-T25-7,5xL	R45 x L						400 ⁷⁾
SFS FB-S-T25-7,5xL	IF/IG-C 82x40						400 ⁷⁾
SFS TI-6,3xL	IF/IG-C 82x40					500 ¹⁾	
SFS TI-T25-6,3xL	R45 x L					500 ¹⁾	
Zahn ZKSK-R		600					
Zahn ZHBK	ZLVT 0005 / 0015				500		
Zahn ZHSK-R					500		
Zahn ZSDK-R						500 ⁶⁾	
Zahn ZTSD						500 ⁶⁾	
Zahn ZGBK-E	ZLVT 0008						400 ⁶⁾
Zahn ZKGK-E/R							400 ⁶⁾

Timber

- 1 structural timber EN 338/C24, $t \geq 22$ mm, effective embedment depth ≥ 22 mm
- 2 polywood BFU 100 EN 636, $t \geq 19$ mm, effective embedment depth ≥ 19 mm
- 3 OSB3 EN 300, $t \geq 18$ mm, effective embedment depth ≥ 18 mm
- 4 particle board EN 312/P5, $t \geq 19$ mm, effective embedment depth ≥ 19 mm

Sheet Deck

- 1 Steel S280GD – EN 10326, $t \geq 0.75$ mm
- 2 Steel S280GD – EN 10326, $t \geq 1.0$ mm
- 3 Aluminium, $R_m \geq 195$ N/mm², $t \geq 1.0$ mm¹⁾ $t \geq 1,2$ mm

Concrete and aerated concrete

- 1) effective anchorage depth ≥ 20 mm
- 2) effective anchorage depth ≥ 25 mm
- 3) effective anchorage depth ≥ 30 mm
- 4) effective anchorage depth ≥ 32 mm
- 5) effective anchorage depth ≥ 35 mm stated by the manufacturer
- 6) effective anchorage depth ≥ 40 mm
- 7) effective anchorage depth ≥ 50 mm
- 8) effective anchorage depth ≥ 55 mm stated by the manufacturer
- 9) effective anchorage depth ≥ 60 mm

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Admissible loads per fastener

Annex A3/2

Admissible wind load per fastener with waterproofing sheet EVALON® V for different types of substrates										
Screw	Washer	Sheet deck			Timber				Concrete	Aerated concrete
		1	2	3	1	2	3	4	EN 206-1	EN 12602 EN 1520
W_{adm} [N]										
EJOT Dabo TKR/TKE (4.8xL)	HTK2G 50 x L	500		500 ¹⁾	500					
EJOT Dabo VHT-R / VHT-E (4.8xL)	HTK2G 50 x L	500		500 ¹⁾	500				--	
EJOT Dabo SW8 ET / -RT (4,8xL)	HTV 82/40	500		500 ¹⁾	500		-			
EJOT Dabo FBS-R (6.3 x L)	EcoTek 50 x L								500 ³⁾	
EJOT Dabo FBS-R (6.3 x L)	HTV 82/40 F								500 ³⁾	
EJOT Dabo JBS-R (7,5xL)	EcoTek 50 x L								500 ³⁾	
EJOT Dabo FPS-E (8.0 x L)	HTV 82/40 F									400 ⁹⁾
EJOT Dabo FPS-E (8.0 x L)	EcoTek 50 x L									400 ⁹⁾
EJOT FDDplus S 50xL	-								500 ³⁾	500 ³⁾
EJOT FDDplus 50xL -R / -E 50xL	-								500 ³⁾	500 ³⁾
ETANCO EHB DF 2C 2,5	Etanco 82x40 R DF	500			500					
ETANCO EGB 2C – 4,8 x L	ETANCOPLAST PP 50	600			500					
ETANCO EGB 2C – 4,8 x L	ETANCOPLAST HP 40	500								
ETANCO EGB 2C – 4,8 x L	ETANCOPLAST HP 82X40	500			500					
ETANCO FASTOVIS 3036 TF DF 2C	Etanco 82x40 R DF	500								
ETANCO BETOFAST TH DF 3C	Etanco 82x40 R								500 ⁵⁾	
ETANCO BETOFAST TB TX 3C	ETANCOPLAST HP6 40								500 ⁵⁾	
ETANCO MULTIFAST TB DF INOX A2	Etanco 82x40 R				500					400 ⁹⁾
ETANCO MULTIFAST TB INOX A2	ETANCOPLAST HP6 40				500					400 ⁹⁾

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Admissible loads per fastener

Annex A4/1

SFS IR2-4,8xL	IR 82x40	500			500		
SFS IR2-S-4,8xL	IR 82x40	500			500		
SFS IR2-C-4,8xL	IRC/W 82x40	500			500		
SFS IR3-4,8xL	IR 82x40	500					
SFS IR3-S-4,8xL	IR 82x40	500					
SFS IW-T-5xL	IRC/W 82x40				500		
SFS IW-S-5xL	IRC/W 82x40				500		
SFS IWF-5,2xL	MW-40-FH				500		
SFS DT-4,8xL	R45 x L					500 ²⁾	
SFS DT-S-4,8xL	R45 x L					500 ²⁾	
SFS DT-4,8xL	IF/IG-C 82x40					500 ²⁾	
SFS DT-S-4,8xL	IF/IG-C 82x40					500 ²⁾	
SFS DT-6,3xL	IF/IG-C 82x40					500 ⁴⁾	
SFS DT-S-6,3xL	IF/IG-C 82x40					500 ⁴⁾	
SFS TPR-L-6,3 x L	IRD 82x40			400			
SFS BS-4,8xL	RP 45xL	500			500		
SFS BS-S-4,8xL	RP 45xL	500			500		
SFS BS3-4,8xL	RP 45xL		500				
SFS LBS-S-T25-8,0xL	R45 x L						400 ⁶⁾
SFS LBS-S-T25-8,0xL	IF/IG-C 82x40						400 ⁸⁾
SFS FB-S-T25-7,5xL	R45 x L						400 ⁷⁾
SFS FB-S-T25-7,5xL	IF/IG-C 82x40						400 ⁷⁾
SFS TI-6,3xL	IF/IG-C 82x40					500 ¹⁾	
SFS TI-T25-6,3xL	R45 x L					500 ¹⁾	
Zahn ZKSK-R		500					
Zahn ZHBK	ZLVT 0005 + 0015				500		
Zahn ZHSK-R					500		
Zahn ZSDK-R						500 ⁸⁾	
Zahn ZTSD						500 ⁸⁾	
Zahn ZGBK-E	ZLVT 0008						400 ⁹⁾
Zahn ZK GK-E/R							400 ⁹⁾

Timber

- 1 structural timber EN 338/C24, $t \geq 22$ mm, effective embedment depth ≥ 22 mm
- 2 polywood BFU 100 EN 636, $t \geq 19$ mm, effective embedment depth ≥ 19 mm
- 3 OSB3 EN 300, $t \geq 18$ mm, effective embedment depth ≥ 18 mm
- 4 particle board EN 312/P5, $t \geq 19$ mm, effective embedment depth ≥ 19 mm

Sheet Deck

- 1 Steel S280GD – EN 10326, $t \geq 0.75$ mm
- 2 Steel S280GD – EN 10326, $t \geq 1.0$ mm
- 3 Aluminium, $R_m \geq 195$ N/mm², $t \geq 1.0$ mm¹⁾ $t \geq 1,2$ mm

Concrete and aerated concrete

- 1) effective anchorage depth ≥ 20 mm
- 2) effective anchorage depth ≥ 25 mm
- 3) effective anchorage depth ≥ 30 mm
- 4) effective anchorage depth ≥ 32 mm
- 5) effective anchorage depth ≥ 35 mm stated by the manufacturer
- 6) effective anchorage depth ≥ 40 mm
- 7) effective anchorage depth ≥ 50 mm
- 8) effective anchorage depth ≥ 55 mm stated by the manufacturer
- 9) effective anchorage depth ≥ 60 mm

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Admissible loads per fastener

Annex A4/2

Admissible wind load per fastener with waterproofing sheet EVALON® dual for different types of substrates										
Screw	Washer	Sheet deck			Timber				Concrete	Aerated concrete
		1	2	3	1	2	3	4	EN 206- 1	EN 12602 EN 1520
		W_{adm} [N]								
EJOT Dabo TKR/TKE (4.8 x L)	HTK2G 50 x L	700			700			-		
EJOT Dabo VHT-R/-E (4.8 x L)	HTK2G 50 x L	700	-	700 ¹⁾	700			-		
EJOT Dabo SW8 ET / -RT (4,8xL)	HTV 82/40	700	700 ¹⁾	700						
EJOT Dabo FBS-R (6.3 x L)	EcoTek 50 x L								500 ³⁾	
EJOT Dabo FBS-R (6.3 x L)	HTV 82/40 F								500 ³⁾	
EJOT Dabo JBS-R (7,5 x L)	EcoTek 50 x L								500 ³⁾	
EJOT Dabo FPS-E (8.0 x L)	HTU 82/40F									400 ⁸⁾
EJOT Dabo FPS-E (8.0 x L)	EcoTek 50 x L									400 ⁸⁾
EJOT FDDplus S 50xL	-								500 ⁸⁾	500 ³⁾
EJOT FDDplus 50xL – R 50 x L	-								500 ³⁾	500 ³⁾
Etanco EHB DF 2C 2,5	Etanco 82x40 R DF	700			500					
ETANCO EGB 2C – 4,8 x L	ETANCOPLAST PP 50	700			500					
ETANCO EGB 2C – 4,8 x L	ETANCOPLAST HP 40	500								
ETANCO EGB 2C – 4,8 x L	ETANCOPLAST HP 82X40	500			500					
ETANCO FASTOVIS 3036 TF DF 2C	Etanco 82x40 R DF	500								
ETANCO BETOFAST TH DF 3C	Etanco 82x40 R								500 ⁸⁾	
ETANCO BETOFAST TB TX 3C	ETANCOPLAST HP6 40								500 ⁸⁾	
ETANCO MULTIFAST TB DF INOX A2	Etanco 82x40 R				500					400 ⁸⁾
ETANCO MULTIFAST TB INOX A2	ETANCOPLAST HP6 40				500					400 ⁸⁾

continued on the next page

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Admissible loads per fastener

Annex A5/1

SFS IR2-4,8xL	IR 82x40	700			500		
SFS IR2-S-4,8xL	IR 82x40	700			500		
SFS IR2-C-4,8xL	IRC/W 82x40	700			500		
SFS IR3-4,8xL	IR 82x40	700					
SFS IR3-S-4,8xL	IR 82x40	700					
SFS IW-T-5 x 5,0xL	IRC/W 82x40				500		
SFS IW-S-5 x 5,0xL	IRC/W 82x40				500		
SFS IWF-5,2xL	MW-40-FH				500		
SFS DT-4,8xL	R45 x L					500 ²⁾	
SFS DT-S-4,8xL	R45 x L					500 ²⁾	
SFS DT-4,8xL	IF/IG-C 82x40					500 ²⁾	
SFS DT-S-4,8xL	IF/IG-C 82x40					500 ²⁾	
SFS DT-6,3xL	IF/IG-C 82x40					500 ⁴⁾	
SFS DT-S-6,3xL	IF/IG-C 82x40					500 ⁴⁾	
SFS TPR-L-6,3xL	IRD 82x40			400			
SFS BS-4,8xL	RP 45xL	700			500		
SFS BS-S-4,8xL	RP 45xL	700			500		
SFS BS3-4,8xL	RP 45xL		500				
SFS LBS-S-T25-8,0xL	R45 x L						400 ⁹⁾
SFS LBS-S-T25-8,0xL	IF/IG-C 82x40						400 ⁹⁾
SFS FB-S-T25-7,5xL	R45 x L						400 ⁷⁾
SFS FB-S-T25-7,5xL	IF/IG-C 82x40						400 ⁷⁾
SFS TI-6,3xL	IF/IG-C 82x40					500 ¹⁾	
SFS TI-T25-6,3xL	R45 x L					500 ¹⁾	
Zahn ZKSK-R		700					
Zahn ZHBK	ZLVT 0005 + 0015				500		
Zahn ZHSK-R					500		
Zahn ZSDK-R						500 ⁶⁾	
Zahn ZTSD						500 ⁶⁾	
Zahn ZGBK-E	ZLVT 0008						400 ⁹⁾
Zahn ZKGK-E/R							400 ⁸⁾

Timber

- 1 structural timber EN 338/C24, $t \geq 22$ mm, effective embedment depth ≥ 22 mm
- 2 polywood BFU 100 EN 636, $t \geq 19$ mm, effective embedment depth ≥ 19 mm
- 3 OSB3 EN 300, $t \geq 18$ mm, effective embedment depth ≥ 18 mm
- 4 particle board EN 312/P5, $t \geq 19$ mm, effective embedment depth ≥ 19 mm

Sheet Deck

- 1 Steel S280GD – EN 10326, $t \geq 0.75$ mm
- 2 Steel S280GD – EN 10326, $t \geq 1.0$ mm
- 3 Aluminium, $R_m \geq 195$ N/mm², $t \geq 1.0$ mm¹⁾ $t \geq 1,2$ mm

Concrete and aerated concrete

- ¹⁾ effective anchorage depth ≥ 20 mm
- ²⁾ effective anchorage depth ≥ 25 mm
- ³⁾ effective anchorage depth ≥ 30 mm
- ⁴⁾ effective anchorage depth ≥ 32 mm
- ⁵⁾ effective anchorage depth ≥ 35 mm stated by the manufacturer
- ⁶⁾ effective anchorage depth ≥ 40 mm
- ⁷⁾ effective anchorage depth ≥ 50 mm
- ⁸⁾ effective anchorage depth ≥ 55 mm stated by the manufacturer
- ⁹⁾ effective anchorage depth ≥ 60 mm

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Admissible loads per fastener

Annex A5/2

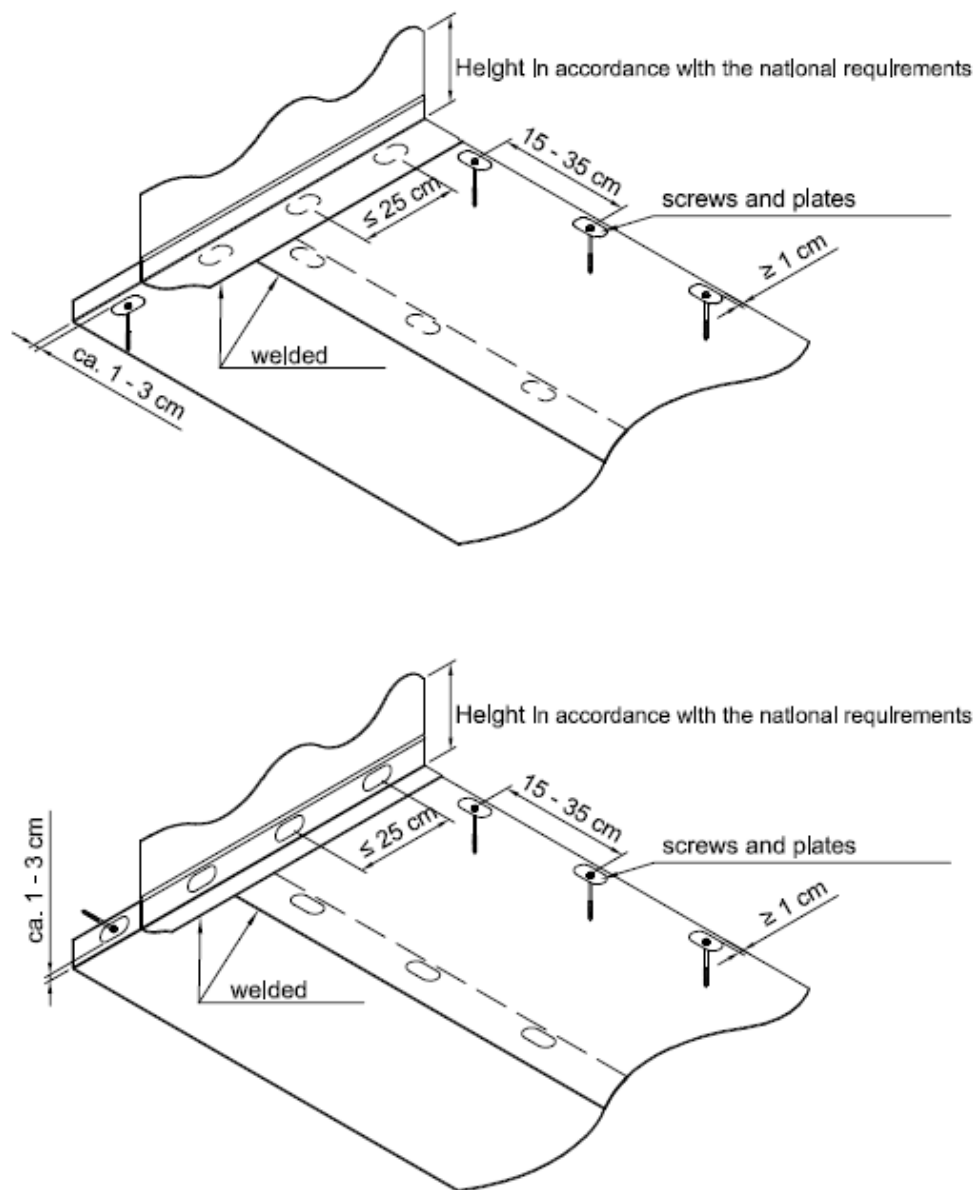


Fig. : Placing of the fixation system and distances between the fasteners.

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Fastening system claimed and fastener spacing

Annex B1

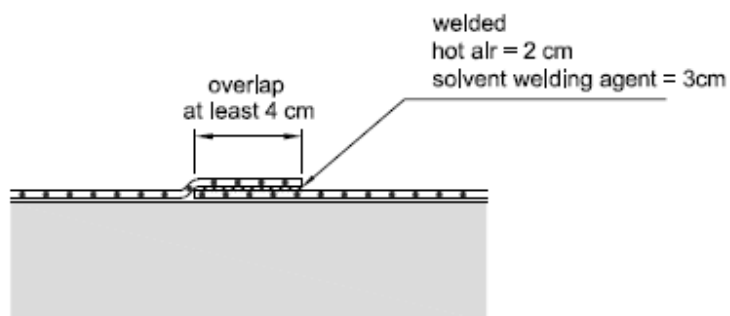


Fig. 6 : Min. overlap in longitudinal area / butt joint at unbacked membranes.

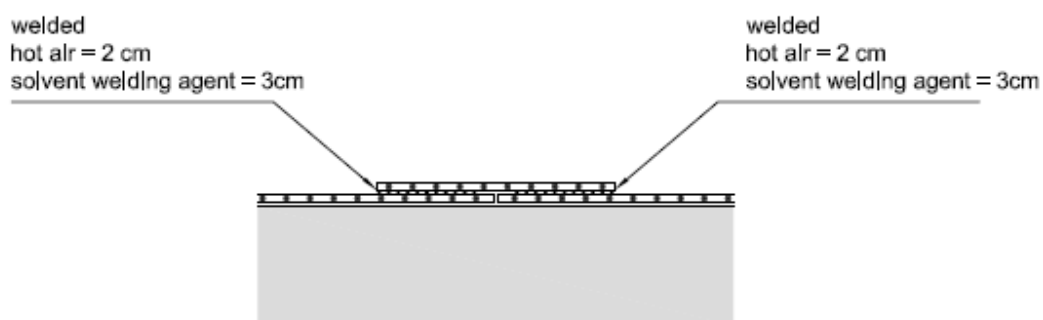


Fig. 7 : Min. overlap in butt joint area.

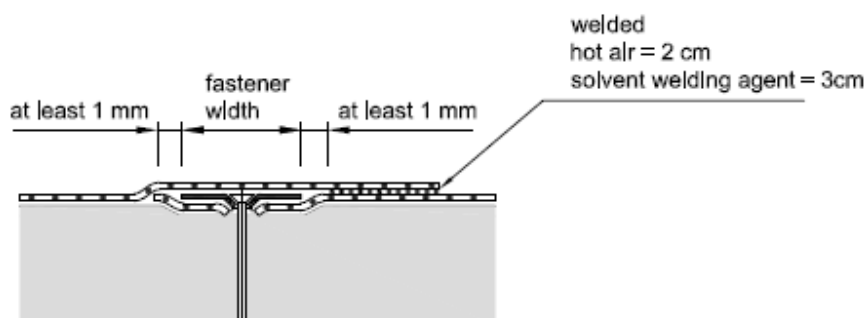


Fig. 8 : Min. overlap in longitudinal area.

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Overlap

Annex B2

Design and dimensioning

For the design and dimensioning of the mechanically fastened roof waterproofing system values stated in the annexes and the design values for the wind loads according to annexes A3/1 till A5/2 shall be used.

Furthermore the demonstrated details according to annexes B1, B2 and to the specifications of the technical file of the manufacturer shall be considered.

The supplementing statements of the manufacturer stated in the technical documentation for design and application of the waterproofing system shall be considered.

Especially the following factors should be taken into account:

- dead and imposed loads,
- design with respect to the decisive wind pressure on roof areas,
- structural strength, stiffness and deflection limits,
- attachment of the roof deck to the structural framing,
- specifications of the insulation,
- assessment of condensation risk and provisions of vapour control layers,
- sound insulation,
- fire precaution,
- roof attachments, fixture and penetrations,
- falls and drainage,
- means of access for inspection and maintenance.
- The substrate onto which the waterproofing kit is to be laid should be sufficiently rigid, dense and dimensionally stable to support the system (sheet and insulation).

Installation

The performances of the roof waterproofing can be assumed only, if the installation is carried out according to the installation instructions stated in the technical file of the manufacturer, in particular taking account of the following points:

- installation by appropriately trained personnel,
- installation of only those components which are marked as components of the system,
- installation with the required tools and adjuvants,
- precautions during installation,
- inspecting the substrate surface for cleanliness and correct preparation,
- inspecting compliance with suitable weather conditions, avoid installation when temperature falls under 5 °C and the following weather conditions: high humidity, rain, snow or fog. By preheating the seam areas, welding is also possible at lower ambient temperatures,
- inspections during installation and of the finished product and documentation of the results.

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Intended use
Specifications

Annex C