

Report
Fatrafol 810/V /
Guardian SP-50-S1 / PS-48420

Order number: 0334-L-08/2

Ref.: ARH/GZ

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Subject : resistance to dynamic wind forces
according to ETAG 006

Order date : 2008.09.30

Report date : 2008.11.26

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Authorisation : prof. ir N.A. Hendriks

Initials : 



Pages : 5
Annexes : 5

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1 Introduction

By order of Fatra A.S., BDA Keuringsinstituut B.V. has determined the resistance to wind load of a mechanically fastened roof waterproofing system with a Fatrafol 810/V roofing sheet in combination with a Guardian SP-50-S1 / PS-48420 fastening system.

On 4 November, 2008 the fastening system has been set at disposal by Mr R. van Doren of Afast B.V.

On 4 November, 2008 the roof waterproofing sheet has been set at disposal by Mr R.E.M. van Hijfte and Mr J.P. Leemrijse of Aabo Trading Company B.V.



2 Investigation

The investigation on the resistance to dynamical wind forces has been performed according to the European directive ETAG 006: Guideline for European Technical Approval of Systems of mechanically fastened flexible roof waterproofing membranes (2000-03, amended 2007-04).

The test has been performed in week 45, 2008.

See annex C for the test schedule.

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3

Construction of the test specimen

On 3 November, 2008 the build-up of the substructure and the application of the insulation have been performed by Mr W.C. Wiersma of BDA Keuringsinstituut B.V.

On 4 November, 2008 the roof waterproofing sheet has been applied by Mr J.P. Leemrijse of Aabo Trading Company B.V.

On 4 November, 2008 the fastening system has been applied by Mr R. van Doren of Afast B.V.

The test specimen has been built up in the presence of Mr R.E.M. van Hijfte of Aabo Trading B.V. and Mr A.R. Hameete of BDA Keuringsinstituut B.V.

The specimen has the test dimensions of 6,00 m × 2,00 m and has been built up according to the prescribed data of the principal from below upwards:

Substructure

- * profiled steel deck, "106 profile", thickness 0,75 mm.

Thermal insulation

- * Rockwool Taurox, dimensions 2000 mm × 600 mm, thickness 100 mm, mechanically fastened with 2 fasteners for each board.

Roofing sheet:

- * Fatrafol 810/V roofing sheet, production code 06-05-2008.
The spacing between the individual fasteners has been set at 250 mm.
The spacing between the rows of fasteners has been set at 1880 mm.
The joint has been welded with hot air.



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Fastening system:

- * roofing screw : Guardian PS-48120;
- * washer : Guardian SP-50-S1.

The fixation at the perimeter has been realized using wooden planks, with dimensions of 120 mm × 18 mm, whereby the roofing sheet has been welded around the planks (see annex D).

The mutual spacing between the fasteners at the perimeter fixation has been set at 250 mm.

For further package data of the applied product, see annex E.

A photo report of the build-up is given in annex B.



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4 Results

Resistance to dynamic wind load

At the 100 % step of the cycle of $\Delta W_{\max 100 \%} = 1400 \text{ N}$ (theoretical load) per fastener the test has been stopped.

According to ETAG 006 the test result is 1300 N (theoretical load) per fastener.

The test result has been interpreted in annex A.

Remark

It shall be emphasised that this investigation is only an indication at a given moment of the properties of the investigated material and it does not provide information on the scope of the variations over the course of time.

These results shall be interpreted:

- either in the framework of a certain project, applying for the tested batch;
- or in the framework of an admission procedure for certification for a general indication in which the quality management of the manufacturer is involved.

Gorinchem, 2008.11.26

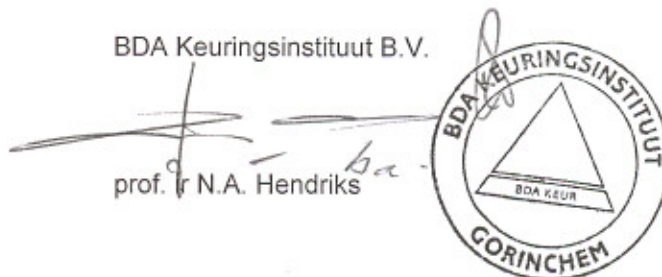
The laboratory

A.R. Hameete



BDA Keuringsinstituut B.V.

prof. Ir N.A. Hendriks



Admissible (design) load according to ETAG 006

The test result of the wind uplift test has been interpreted according to ETAG 006: "Guideline for the European Technical Approval of systems of mechanically fastened flexible roof waterproofing membranes" (2000-03, amended 2007-04).

The admissible (design) load for the wind uplift resistance has been specified in the next formula:

$$W_{adm} = \frac{W_{test} \cdot C_a \cdot C_d}{\gamma_m}$$

Wherein:

W_{adm} = admissible (design) load for the wind uplift resistance (N per fastener);

W_{test} = test result (N per fastener);

C_a = geometric correction factor;

C_d = statistical correction factor;

γ_m = material correction factor.

System	W_{test}	C_a	C_d	γ_m	W_{adm}
Fatrafol 810/V roofing sheet mechanically fastened with Guardian SP-50-S1 / PS-48120 fastening system.	1300	0,82	1,0	1,5	711

Photo 1

The insulation has been fixed on the profiled steel.



Photo 2

The roof waterproofing sheet is fastened.



Photo 3

Detail of the fastening system.

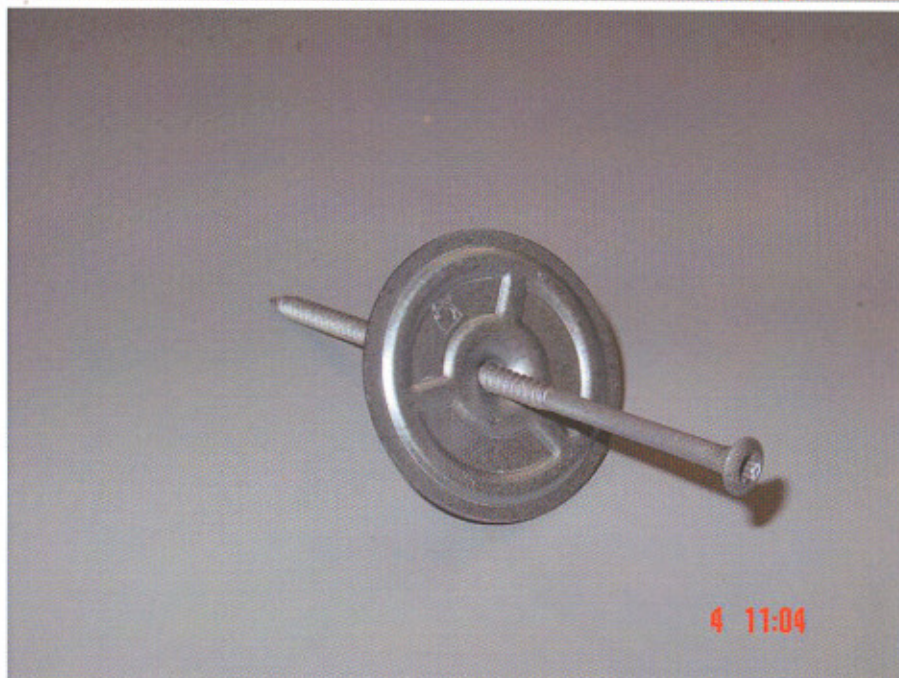


Photo 4
The model is ready for testing.





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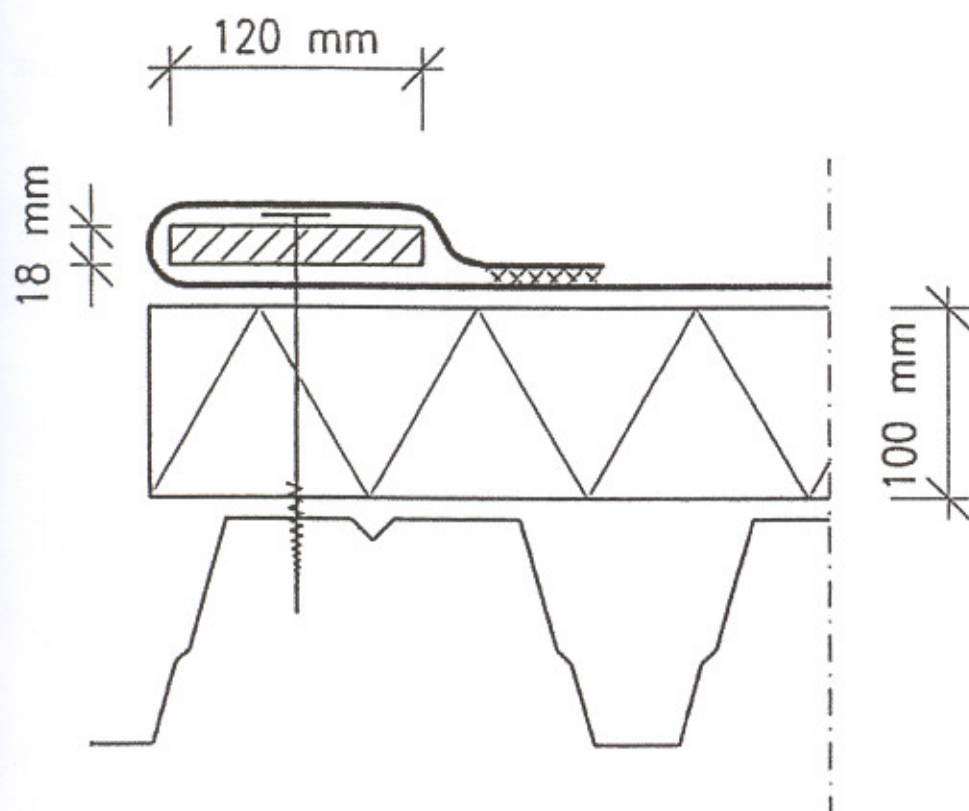
WIND TEST		Order number		0334-L-08			
Start of test:		4-11-2008		End of test:		6-11-2008	
Perator(s):		W.C. Wiersma en J. Delgado				KEUR	
System:		eenlaags mechanisch bevestigd					
Dimensions test area		longer side		shorter side (m)		a/b = 7,52	
		6,00 m		x 2,00 m		m/b = 8,00	
Distance between rows (a):		1,88 m				α	
Distance between fasteners (b):		0,25 m				β	
Number of fasteners per m²:		2,13				C_d	
Number of spaces between the rows (α)		3				2	
Number of spaces between te fasteners (β)		7				3	
						4	
						5	
						6	
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Figure 1





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Package data of the applied product

Substructure

van Delft
Bouw en Woning

ordernummer 84 533 pakketnr. 2/5

BIJLBOUW B.V.

EN 14782 2008

uw referentie : 27340 - Gorinchem







CE

produkt : Warmdakplaten
type : VD 106R/750
dikte : 0,75 mm
uitvoering A : Sendzimir verzinkt
uitvoering B : Sendzimir verzinkt
brandklasse : klasse A1

gewicht : 1.001,0 kg hoeveelheid : 102,00 m²

aantal	lengte	aantal	lengte
40	3400		

Thermal insulation

DAKPLAAT DACHPLATTE PANNEAU DE TOITURE ROOFBOARD					
TAUROX					
Dikte Epaissieur Dicke Thickness		Lengte Longueur Lange Length		Breedte Largeur Breite Width	
100 MM		200 CM		60 CM	
				28.8 M ²	
R declared		λ declared			
2.50 m ² K/W		0.040 W/mK			
					
				04-0749	
BC1-511-0003-0085-R268 ROERMOND NL A1 EUROCLASS MW-EN 13162-T4-DS(TH)- CS(10)50-TR15-PL(5)500-WS					
ROCKWOOL Lapinus Productie BV		22487 4ROE6LINE			



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Roofing sheet

CE 1390	
FATRA, a.s., Iř.T. Běl 1541, 763 61 Napajedla, Czech Republic	
08 1390-CPD-0033/06/Z	
EN 13956	
Střešní fólie z PVC-P vyztužená polyesterovou mřížkou PVC-P roofing membrane with polyester scrim reinforcement	
Název výrobku Trade name	R 810/V
Ročník Size	2000 mm x 1,20 mm
Množství Quantity	25,00 m - 50,00 m
Barva - Colour	2794 - světlá šedá - light grey
Dezén-Embossing	340V
Použití: Mechanicky kolovaná hydroizolační vrstva Exposed application: Mechanically fastened waterproofing	
Reakce na oheň - Reaction to fire: B	
Chování při vnějším požáru - External fire performance: B _{sdor} (f1)	
Pevnost v tahu-Tensile strength: ≥ 900 N/50 mm, Tažnost-Elongation: 1-15 %	
Odolnost proti statickému zatížení - Resistance to static loading: ≥ 20 kg	
Vodotěsnost - Watertightness: 10 kPa (60 kPa)	
Odolnost proti nárazu - Resistance to impact: Ø 10 mm (-10 °C, h=300 mm)	
Odolnost proti polhávání - Test resistance: ≥ 160 N	
Odolnost proti odlepování ve spoji - Joint peel resistance: ≥ 250 N/50 mm	
Smýková odolnost ve spoji - Joint shear resistance: ≥ 810 N/50 mm	
Ohebnost za nízkých teplot - Foldability at low temperature: ≤ -35 °C	
Vystavení UV záření, zvýšené teplotě a vodě: vyhovuje, třída 6	
Exposure to UV radiation, elevated temperature and water: pass, grade 6	
Datum výroby Date of Production	- 6 - 05 - 2008
Pracovník Supervisor	PŠENČÍK LEOŠ

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Fastening system

SP Ø 50mm

GUARDIAN METALEN DRUKVERDEELPLATEN VOOR BEVESTIGING EENLAAGSE SYSTEMEN

- Sendzimir verzinkt staal, 15 cycli
- Afmeting rond Ø 50mm
- Dikte 1,0mm
- Gatdiameter 5,00 – 7,00
- NBI Approval



AFMETING / VLAKE ONDERZIJDE	ARTIKELCODE	VERPAKKING
SP 50 x 1,0MM F 3 Ø 5,00MM	SP-50-F3	1000*
SP 50 x 1,0MM F 4 Ø 7,00MM	SP-50-F4	1000*



AFMETING / STANDAARD KOM	ARTIKELCODE	VERPAKKING
SP 50 x 1,0MM S 1 Ø 5,00MM	SP-50-S1	1000*
SP 50 x 1,0MM S 3 Ø 7,00MM	SP-50-S3	1000*



AFMETING / DIEPE KOM	ARTIKELCODE	VERPAKKING
SP 50 x 1,0MM D 1 Ø 5,00MM	SP-50-D1	1000
SP 50 x 1,0MM D 3 Ø 7,00MM	SP-50-D3	1000

GETANDE DRUKVERDEELPLAAT, VOOR EEN HOGERE REKENWAARDE



AFMETING / GETAND / STANDARD KOM	ARTIKELCODE	VERPAKKING
SPB 50 x 1,0MM BARB S 4 Ø 7,00MM	SPB-50-S4	1000

* OOK PER 500 GESTAPELD VERPAKT IN EMMER (ARTIKELCODE + E)

S = STANDAARD KOM

F = VLAKE ONDERZIJDE

D = DIEPE KOM



Guardian
 Secures your roof

PS 4,8

GUARDIAN PS DAKSCHROEF

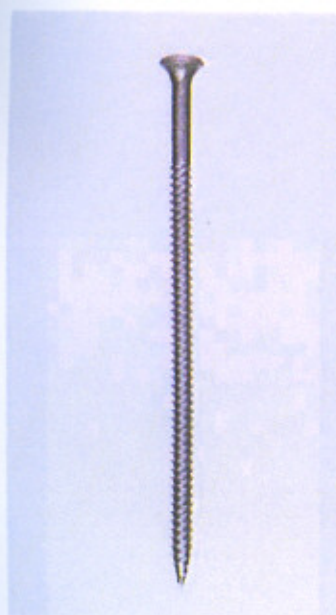
- Torx-25 Kop
- S-Punt (Capaciteit t/m 0,88mm)
- Enduroguard Coating, 15 cycli
- NBI-Approval
- Verpakt in emmers

TE GEBRUIKEN IN

- Staal dak t/m 0,88mm

TE VERWERKEN MET

- Ergo-Stick



Ø MM x L MM	ARTIKELCODE	VERPAKKING
4,8 x 40MM	PS-48040	1000
4,8 x 50MM	PS-48050	1000
4,8 x 60MM	PS-48060	1000
4,8 x 70MM	PS-48070	500
4,8 x 80MM	PS-48080	500
4,8 x 90MM	PS-48090	500
4,8 x 100MM	PS-48100	500
4,8 x 110MM	PS-48110	500
4,8 x 120MM	PS-48120	500
4,8 x 130MM	PS-48130	500
4,8 x 140MM	PS-48140	500
4,8 x 150MM	PS-48150	500
4,8 x 160MM	PS-48160	500
4,8 x 170MM	PS-48170	500
4,8 x 180MM	PS-48180	500
4,8 x 200MM	PS-48200	500
4,8 x 220MM	PS-48220	500
4,8 x 240MM	PS-48240	500
4,8 x 260MM	PS-48260	500
4,8 x 280MM	PS-48280	500
4,8 x 300MM	PS-48300	500

ONDERGROND	UITTREKWAARDE	BENODIGDE LENGTE: OPBOUW +
STAALDAK 0,75MM	1.600 N	20MM
STAALDAK 0,88MM	1.800 N	20MM



Guardian
Secures your roof