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European Technical Assessment

**ETA-16/0443
of 30/06/2016**

General part

Technical Assessment Body issuing the European Technical Assessment

Instytut Techniki Budowlanej

Trade name of the construction product

WFD, WFDOC, WFDx, WFD-D, A2-WFD,
WDD, WDDx, WDD-D,
WSB, WSBx, WSB-D, A2-WSB,
WSBP, WSPBx, WSPB-D, A2-WSBP,
WS, WSx, WS-D, A2-WS,
WF, WFOC, WFx, WF-D, A2-WF,
WSS, WSSx, WSS-D, A2-WSS,
WSSBP, WSSBPx, WSSBP-D, A2-WSSBP,
WB6, WB6x, WB6-D, A2-WB6
WB6P, WB6Px, WB6P-D, A2-WB6P

Product family to which the construction product belongs

Fastening screws for metal members and sheeting

Manufacturer

KLIMAS Sp. z o.o.
ul. Wincentego Witosa 135/137
42-233 Mykanów
Poland

Manufacturing plant

WKREŃ-MET sp. z o.o., sp. komandytowa
ul. Wincentego Witosa 170/176
42-233 Mykanów
Poland

This European Technical Assessment contains

39 pages including 33 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

European Assessment Document (EAD)
EAD 330046-01-0602 "Fastening screws for metal members and sheeting"

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Specific Part

1. Technical description of the product

The fastening screws WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSBPx, WSBP-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D and A2-WB6P are a self-drilling and self-taping screws listed in Table 1. The fastening screws are partly completed with a steel or aluminum washer and an EPDM sealing ring. For details see Annexes 1 to 32.

The fastening screws and the corresponding connections are subject to tension and shear forces.

Table 1

No.	Screw	Material	Annex
1	WFD-4,8 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	1
2	WFDOC-4,8 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	
3	WFDx-4,8 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
4	WFD-D-4,8 x L	galvanized carbon steel with ceramic coating	
5	WFD-5,5 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	2
6	WFDOC-5,5 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	
7	WFDx-5,5 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
8	WFD-D-5,5 x L	galvanized carbon steel with ceramic coating	
9	A2-WFD-4,8 x L	stainless steel (bi-metal)	3
10	A2-WFD-5,5 x L	stainless steel (bi-metal)	4
11	WDD-4,8 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	5
12	WDDx-4,8 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
13	WDD-D-4,8 x L	galvanized carbon steel with ceramic coating	
14	WDD-5,5 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	6
15	WDDx-5,5 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
16	WDD-D-5,5 x L	galvanized carbon steel with ceramic coating	
17	WSB-4,8 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	7
18	WSBx-4,8 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
19	WSB-D-4,8 x L	galvanized carbon steel with ceramic coating	
20	A2-WSB-4,8 x L	stainless steel (bi-metal)	8
21	WSBP-4,8 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	9
22	WSBPx-4,8 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
23	WSBP-D-4,8 x L	galvanized carbon steel with ceramic coating	
24	A2-WSBP-4,8 x L	stainless steel (bi-metal)	10
25	WS-4,2 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	11
26	WSx-4,2 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
27	WS-D-4,2 x L	galvanized carbon steel with ceramic coating	
28	WS-4,8 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	12
29	WSx-4,8 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
30	WS-D-4,8 x L	galvanized carbon steel with ceramic coating	
21	A2-WS-4,8 x L	stainless steel (bi-metal)	13
22	WS-5,5 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	14
23	WSx-5,5 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
24	WS-D-5,5 x L	galvanized carbon steel with ceramic coating	
25	A2-WS-5,5 x L	stainless steel (bi-metal)	15
26	WS-6,3 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	16
27	WSx-6,3 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
28	WS-D-6,3 x L	galvanized carbon steel with ceramic coating	
29	A2-WS-6,3 x L	stainless steel (bi-metal)	17

Table 1, cont.

No.	Screw	Material	Annex
30	WF-4,2 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	18
31	WFX-4,2 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
32	WF-D-4,2 x L	galvanized carbon steel with ceramic coating	
33	WF-4,8 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	19
34	WFOC-4,8 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	
35	WFX-4,8 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
36	WF-D-4,8 x L	galvanized carbon steel with ceramic coating	20
37	A2-WF-4,8 x L	stainless steel (bi-metal)	
38	WF-5,5 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	21
39	WFOC-5,5 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	
40	WFX-5,5 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
41	WF-D-5,5 x L	galvanized carbon steel with ceramic coating	
42	A2-WF-5,5 x L	stainless steel (bi-metal)	22
43	WF-6,3 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	23
44	WFOC-6,3 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	
45	WFX-6,3 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
46	WF-D-6,3 x L	galvanized carbon steel with ceramic coating	
47	A2-WF-6,3 x L	stainless steel (bi-metal)	24
48	WSS-5,5 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	25
49	WSSx-5,5 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
50	WSS-D-5,5 x L	galvanized carbon steel with ceramic coating	
51	A2-WSS-5,5	stainless steel (bi-metal)	26
52	WSSBP-5,5 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	27
53	WSSBPx-5,5 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
54	WSSBP-D-5,5 x L	galvanized carbon steel with ceramic coating	
55	A2-WSSBP-5,5 x L	stainless steel (bi-metal)	28
56	WB6-6,3 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	29
57	WB6x-6,3 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
58	WB6-D-6,3 x L	galvanized carbon steel with ceramic coating	
59	WB6P-6,3 x L	galvanized carbon steel with $\geq 12 \mu\text{m}$ of zinc	30
60	WB6Px-6,3 x L	galvanized carbon steel with $\geq 20 \mu\text{m}$ of zinc	
61	WB6P-D-6,3 x L	galvanized carbon steel with ceramic coating	
62	A2-WB6-6,3 x L	stainless steel (bi-metal)	31
63	A2-WB6P-6,3 x L	stainless steel (bi-metal)	32

2. Specification of the intended use in accordance with the applicable European Assessment Document (EAD)

The fastening screws are intended to be used for fastening steel sheeting to steel or timber supporting substructures. For details see the Annexes 1 to 32. The component to be fastened is component I and the supporting structure is component II. The sheeting can either be used as wall or roof cladding or as load bearing wall and roof element. The fastening screws can also be used for the fastening of any other thin gauge steel members.

The intended use comprises fastening screws and connections for indoor and outdoor applications. Fastening screws which are intended to be used in external environments with \geq C2 corrosion according to the standard EN ISO 12944-2 are made of stainless steel.

Furthermore the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads).

The provisions made in this European Technical Assessment are based on an assumed working life of the fasteners of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical

Assessment Body, 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.

3. Performances of the product and references to the methods used for their assessment

3.1. Performance of the product

3.1.1 Mechanical resistance and stability (BWR 1)

The characteristic values of the shear resistance of connections and tension resistance of connections with the fasteners are given in Annex 1 to 32. The values were determined by tests according to EAD 330046-01-0602.

The design values shall be determined according to Annex 33 and EAD 330046-01-0602.

For the corrosion protection the rules given in EN 1993-1-3, EN 1993-1-4 and EN 1999-1-4 shall be taken into account. Fastening screw which are made of stainless steel are intended to be used in external environments \geq C2 corrosion according to the standard EN ISO 12944-2.

3.1.2. Safety in case of fire (BWR 2)

The fastening screws are considered to satisfy the requirements of performance class A1 of reaction to fire, in accordance with the provisions of the EC Decision 96/603/EC (as amended) without the need for testing on the basis of its listing in that decision.

3.1.3. Hygiene, health and the environment (BWR 3)

Regarding the dangerous substances clauses contained in this European Technical Assessment, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.2. Methods used for the assessment

The assessment of fitness of the mechanical fasteners for the declared intended use has been made in accordance with the EAD 330046-01-0602.

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

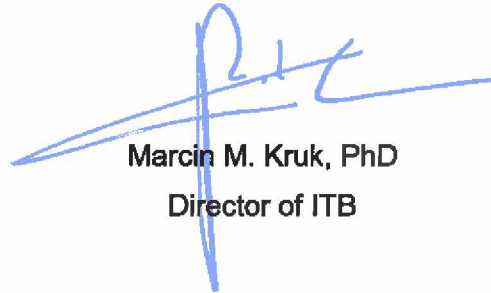
According to Decision 1998/214/EC, amended by 2001/596/EC, of the European Commission the system 2+ of assessment and verification of constancy of performance applies (see Annex V to Regulation (EU) No 305/2011).

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document (EAD)

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at the Instytut Techniki Budowlanej.

For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 30/06/2016 by Instytut Techniki Budowlanej

A handwritten signature in blue ink, consisting of a large, stylized 'M' followed by a horizontal line and a small flourish.

Marcin M. Kruk, PhD

Director of ITB

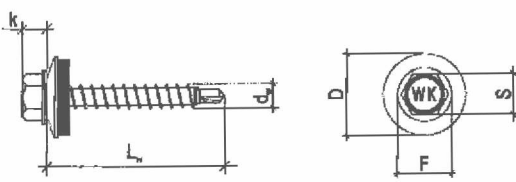
<p>Materials</p> <p>Fastener: carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized</p> <p>Washer: EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel</p> <p>Component I: S280GD, S320GD or S350GD – EN 10346</p> <p>Component II: structural timber – EN 14081</p>	
<p>Drilling capacity: $\Sigma t \leq 2,5$ mm</p>	<p>$d_w = 5,5$ mm $L_w = 25-100$ mm $s = 8$ mm $k = 4,5$ mm</p>
<p>Timber substructures</p> <p>For timber substructures performance assessed with:</p> <p>$M_{y,Rk} = 4,390$ Nm</p> <p>$f_{ax,k} = 12,867$ N/mm² for $l_{ef} \geq 20$ mm</p> <p>$f_{ax,k} = 12,015$ N/mm² for $l_{ef} \geq 30$ mm</p>	

$t_{N,II}$ [mm]	0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class \geq C24		
$M_{t,nom}$	3 Nm								20 mm	30 mm	
V_{Rk} [kN] for $t_{N,II}$ [mm]	—	—	—	—	—	—	—	—	1,10*	1,10*	*bearing resistance of component I
0,50	—	—	—	—	—	—	—	—	1,10*	1,10*	
0,55	—	—	—	—	—	—	—	—	1,50*	1,50*	
0,63	—	—	—	—	—	—	—	—	1,74*	1,74*	
0,75	—	—	—	—	—	—	—	—	1,74*	1,74*	
0,88	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,00	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,13	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,25	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,50	—	—	—	—	—	—	—	—	—	—	
1,75	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	
N_{Rk} [kN] for $t_{N,II}$ [mm]	—	—	—	—	—	—	—	—	1,24*	1,73*	*bearing resistance of component II
0,50	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,55	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,63	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,75	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,88	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,00	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,13	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,25	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,50	—	—	—	—	—	—	—	—	—	—	
1,75	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	

WFD, WFD0C, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSPB, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WFD-5,5 x L, WFD0C-5,5 x L, WFDx-5,5 x L and WFD-D-5,5 x L
 Self-drilling screws with hexagon head and sealing washer $\varnothing 16$ mm with metal top made of aluminum (A), coated carbon steel (Z) or stainless steel (S)

Annex 2
 of European
 Technical Assessment
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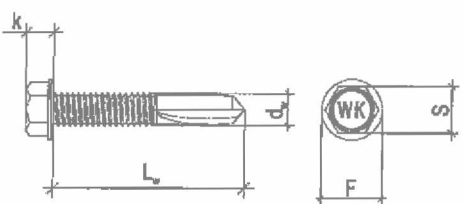
<p>Materials Fastener: stainless steel – SAE 304 bi-metal</p> <p>Washer: EPDM sealing ring with metal top made of aluminum or stainless steel</p> <p>Component I: S280GD, S320GD or S350GD – EN 10346</p> <p>Component II: structural timber – EN 14081</p>	
Drilling capacity: $\Sigma t_i \leq 2,5$ mm	
<p>Timber substructures For timber substructures performance assessed with: $M_{y,Rk} = 4,390$ Nm $f_{ax,k} = 12,867$ N/mm² for $l_{ef} \geq 20$ mm $f_{ex,k} = 12,015$ N/mm² for $l_{ef} \geq 30$ mm</p>	<p>$d_w = 4,8$ mm $L_w = 25-100$ mm $s = 8$ mm $k = 4,5$ mm</p>

$t_{w,II}$ [mm]	0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class \geq C24		
$M_{t,nom}$	3 Nm								20 mm	30 mm	
V_{Rk} [kN] for $t_{w,II}$ [mm]	0,50	—	—	—	—	—	—	—	1,10*	1,10*	*bearing resistance of component I
	0,55	—	—	—	—	—	—	—	1,10*	1,10*	
	0,63	—	—	—	—	—	—	—	1,50*	1,50*	
	0,75	—	—	—	—	—	—	—	1,74*	1,74*	
	0,88	—	—	—	—	—	—	—	1,74*	1,74*	
	1,00	—	—	—	—	—	—	—	1,74*	1,74*	
	1,13	—	—	—	—	—	—	—	1,74*	1,74*	
	1,25	—	—	—	—	—	—	—	1,74*	1,74*	
	1,50	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	
N_{Rk} [kN] for $t_{w,II}$ [mm]	0,50	—	—	—	—	—	—	—	1,24*	1,73*	*bearing resistance of component II
	0,55	—	—	—	—	—	—	—	1,24*	1,73*	
	0,63	—	—	—	—	—	—	—	1,24*	1,73*	
	0,75	—	—	—	—	—	—	—	1,24*	1,73*	
	0,88	—	—	—	—	—	—	—	1,24*	1,73*	
	1,00	—	—	—	—	—	—	—	1,24*	1,73*	
	1,13	—	—	—	—	—	—	—	1,24*	1,73*	
	1,25	—	—	—	—	—	—	—	1,24*	1,73*	
	1,50	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	

WFD, WFD0C, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSPB, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WFD-4,8 x L
Self-drilling screws with hexagon head and sealing washer $\varnothing 14$ mm with metal top made of aluminum (A) or stainless steel (S)

Annex 3
of European
Technical Assessment
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Materials Fastener: carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized Washer: Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S280GD, S320GD or S350GD – EN 10346	
Drilling capacity: $\Sigma t_i \leq 12,0$ mm	
Timber substructures no performance assessed	

$d_w = 5,5$ mm
 $L_w = 19-90$ mm
 $s = 8$ mm
 $k = 4,9$ mm

$t_{N,II}$ [mm]	1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,00	10,00	Wood class \geq C24			
$M_{t,nom}$	7 Nm									20 mm	30 mm		
$V_{R,k}$ [kN] for $t_{N,II}$ [mm]	0,50	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	—
	0,55	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	
	0,63	—	—	—	—	1,88	1,88	1,88	1,88	1,88	—	—	
	0,75	—	—	—	—	2,50	2,50	2,50	2,50	2,50	—	—	
	0,88	—	—	—	—	2,87	2,87	2,87	2,87	2,87	—	—	
	1,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,13	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,25	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,50	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,75	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	2,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
$N_{R,k}$ [kN] for $t_{N,II}$ [mm]	0,50	—	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	—
	0,55	—	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	
	0,63	—	—	—	—	0,89	0,89	0,89	0,89	0,89	—	—	
	0,75	—	—	—	—	1,01	1,01	1,01	1,01	1,01	—	—	
	0,88	—	—	—	—	1,07	1,07	1,07	1,07	1,07	—	—	
	1,00	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,13	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,25	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,50	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,75	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	2,00	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
 If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFD0C, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSPB, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P Fastening screws for metal members and sheeting	Annex 27 of European Technical Assessment ETA-16/0443
WSSBP-5,5 x L, WSSBPx-5,5 x L and WSSBP-D-5,5 x L Self-drilling screws with hexagon head	

Determination of Design Values

1. Determination of Design Shear Resistance

The determination of the design values of the shear resistance depends on the type of supporting substructure.

For Metal Substructures the following applies:

The design values $V_{R,d}$ of the shear resistance are the characteristic values of the shear resistance divided by the recommended partial safety factor $\gamma_M = 1,33$. The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

For Timber Substructures the following applies:

The design values $V_{R,d}$ of the shear resistance are the characteristic values of the shear resistance multiplied by k_{mod} according to EN 1995-1-1, Table 3.1, and divided by the recommended partial safety factor $\gamma_M = 1,33$. If failure of the metal component with the thickness t_f and not failure of the timber substructure is the relevant failure mode then $k_{mod} = 1.0$.

The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

2. Determination of Design Pull-through, Pull-out and Tension Resistance

The design values of the pull-through resistance are the characteristic values of the pull-through resistance divided by the recommended partial safety factor $\gamma_M = 1,33$. The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

The determination of the design values of the pull-out resistance depends on the type of substructure.

For Metal Substructures the following applies:

The design values of the pull-out resistance are the characteristic values of the pull-out resistance divided by the recommended partial safety factor $\gamma_M = 1,33$. The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

For Timber Substructures the following applies:

The design values of the pull-out resistance are the characteristic values of the pull-out resistance multiplied by k_{mod} according to EN 1995-1-1, Table 3.1, and divided by the recommended partial safety factor $\gamma_M = 1,33$. The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

The design tension resistance $N_{R,d}$ is the minimum value of the design values of either pull-through resistance or relevant pull-out resistance for the corresponding connection.

3. Design Resistance in case of combined Tension and Shear Forces (interaction)

In case of combined tension and shear forces the linear interaction formula according to EN 1993-1-3, section 8.3 (8) or EN 1999-1-4, section 8.1 (7) should be taken into account.

WFD, WFD0C, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

Annex 33
of European
Technical Assessment
ETA-16/0443

Determination of Design Values

TECHNICAL DATA SHEET

Eurovent FLEXBIT

Bitumen roofing tape for sealing and finishing works in flat and sloping roofs. Suitable for multiple applications and available in different colours. Bitumen-based and solvent-free product coated with a layer of aluminum.



PARAMETER	UNIT	VALUE
Material		Bitumen adhesive and aluminum foil
Thickness	[mm]	1,0 ± 0,2
Tensile strength	[N]	> 200
Fire resistance	[Class]	E
Vapour-permeability	[m]	> 1500
Tear resistance	[N]	20 - 40
Gluing temperature	[°C]	+5 do +45
Temperature resistance	[°C]	-30 do 80
UV resistance		Resistant
Roll's width	[mm]	100; 150; 300
Roll's length	[lm]	10
Available colors	[RAL]	burgundy 3004; wallred 8004; brow 8019; aluminum 9006; graphite 9007
Storage temperature	[°C]	from 1 up to 25
Storage period	[month]	up to 12
Box	[pcs]	100 mm - 3; 150 mm - 2; 300 mm - 1
Pallet	[pcs]	100 mm: 288; 150 mm: 192; 300 mm: 96

Advantages:

- High adhesive strength
- Water-tightness • Solvent-free

Eurovent FLEXBIT

Application:

Roofing tape for sealing and finishing works around chimneys, roof windows, firewalls, skylights, valleys as well as ventilating elements in both flat and sloping roofs. Effectively binds metal elements with other plastic-based surfaces, concrete and brick. Recommended for use around chimneys and other elements protruding above the surface of the roof.

Montage:

Please ensure that the surface you want to apply the butyl on is clean and dry. Peel off the security liner, place the tape, and apply some pressure.

Safety:

Try to avoid direct, long term skin butyl exposure. Before finishing the application please wash your hands.

Storage / transport:

The tape should be stored in a dry place, under cover, free from moisture and UV radiation. The rolls are made partially from elastic aluminium please store in original, closed boxes. Please protect from damages. Rolls should be transported in covered means of transport. They should be prepared for transport in a manner that protects them from damage and destruction. During transport safety regulations must be observed. The product should be protected from chemical agents, in particular solvent-based substances, as they can reduce technical parameters of foil or permanently damage it.

The product is under warranty, provided that the guidelines contained in technical data sheet are being obeyed. We reserve the right to refuse a complaint recognition in case of not following these guidelines.

Contained information, advice and guidance is given based on our knowledge, researches, experience and in good faith. We are not responsible for the consequences of improper or incorrect use of our products. Each user of this material will ensure in every possible way, including an examination of the final product in the relevant conditions, the suitability of supplied materials to achieve the objectives pursued by him.

Product information can be found on the website: www.eurovent.de

Update date: 01/2018

TECHNICAL DATA SHEET

Eurovent ROLL ECCO

Ridge tape made of profiled aluminium sheet, nonwoven PP and butyl adhesive tape. Used as a ventilation and protection element, preventing moisture and dust from the roof slope and assuring ventilation.



PARAMETER	UNIT	VALUE
Material		Profiled aluminium sheet, nonwoven PP, butyl adhesive tape
Width	[mm]	180; 240; 310; 390
Lenght	[rm]	5
Aluminum	[mm]	Width: 50; 70 Thickness: 0,12
Nonwoven PP		Width: 120 mm, 180 mm, 200 mm Thickness: ca. 0,50 mm Components: 100% Polipropylen Stabilization: 2 % stabilization HALS, Concentration 20 %, Weight: 100 gr/m ² , Tearing strength: 208-215 N/5 cm Elongation at break: ca. 75% Fiber thickness: 2,2 - 2,6 den
Butyl tape	[mm]	15 x 1,0 black
Colour	[RAL]	Copper wallred 8004; brown 8017; brown 8019; anthracite 7021; black 9005; cherry 3011; chestnut 8015
Storage temperature	[°C]	From 5 to 25
Retention period	[month]	To 12
Carton	[pcs.]	180 mm - 310 mm - 5 390 m- 4
Pallet	[pcs.]	180 mm - 240 240 mm - 210 310 mm - 180 390 mm - 100

Advantages:

- Effective ventilation
- UV resistant
- Fast and easy installation

Eurovent **ROLL ECCO**

Application:

The Eurovent ROLL ECCO ridge tape is designed for use as a sealing and ventilating element for roof ridges and hips. It protects the roof covering against penetration of snow, rain, moisture and dust. Suitable for use in almost all types of roof coverings - ceramic, concrete, metal roofing tiles, trapezoidal sheets, profiled aluminium sheets, etc.

Fitting:

Store at room temperature (from 5 °C to 25 °C) for about 24 hours before applying the tape. The temperature during tape application should be above 5 °C (recommended above 10 °C). The cover to which the tape is glued should be dry and free from dust and grease.

The tape is laid on the ridge batten, under the ridge tile. Prior to assembly, clean properly and dry the surface to which the tape is going to be stuck. Peel off the butyl liner before use. Form the pleated sides of the tape to the tile pattern.

Storage / transport:

The product should be stored under roof in dry, damp-free rooms, protected from direct UV radiation. Product can be deformed, disfigured or suffer from damages of galvanized/paint coating if put under high pressure. Therefore it is unadvised to stack the product with other heavy products (both in storage and in transport). It is recommended to transport the product with use of covered means of transport, in manner that protects them from damage. During the transport safety regulations have to be observed. The product should be protected from chemical agents, in particular solvent-based substances, as they can reduce technical parameters of the product or permanently damage it.

The product is under warranty, providing that the guidelines included in technical data sheet are being obeyed. We reserve the right to refuse a complaint recognition in case of not following these guidelines.

Included information, advices and guidance is given based on our best knowledge, researches, experience and in good faith. We are not be held responsible for the consequences of improper or incorrect use of our products. Each user of the product shall ensure, in every possible way, including checking the end-product in given conditions, that the provided product is suitable to reach objectives he pursues.

Product information can be found on the website: www.eurovent.de

Data aktualizacji: 07/2022