Evidence of Performance

Resistance to wind load
Watertightness
Air permeability

Test Report 102 42802/3e

Client	ASAS Alüminyum San.ve Tic.A.S. Rüzgarli Bace, Asas is Merkezi 34810 Kavacik-Beykoz ISTANBUL Turkey
Product	Single leaf sliding window with fixed sidelight
System	veratec / asaşpen 7400 Sürme Sistem (7406) / Standard
Overall dimensions (W x H)	1,700 mm x 1,500 mm
Frame material	PVC-U/white
Special features	-/-

Resistance to wind load – EN 12210

Class C3 / B3

Watertightness – EN 12208

Class 4A

Air permeability – EN 12207

Class 3

ift Rosenheim
2. June 2010

Jörn Peter Lass, Dipl.-Ing. (FH)
Head of Testing Department
ift Centre Windows & Facades

Robert Kolacny, Dipl.-Ing. (FH)
Test engineer
ift Centre Windows & Facades

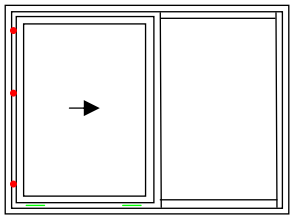
Basis

EN 14351-1 : 2006-03

Test standards:
EN 1026 : 2000-06
EN 1027 : 2000-06
EN 12211 : 2000-06
EN 12046-1 : 2003-11
EN 14609 : 2004-03

Corresponds to the national standard (DIN EN)

Representation



Instruction for use

The present test report serves to demonstrate the above characteristics of windows according to EN 14351-1:2006-03. The results obtained can be used by the manufacturer as the basis for the manufacturer ITT test report summary. The conditions and requirements set out by EN 14351-1:2006-03 shall be observed.

Validity

The data and results refer solely to the tested and described specimen.

The test results can be extrapolated as per EN 14351-1, under observance of Annex E 1., under the manufacturer's own responsibility.

The test does not allow any statement to be made on further characteristics of the present structure and quality, in particular the effects of weathering and ageing.

Notes on publication

The **ift**-Guidance Sheet "Conditions and Guidance for the Use of **ift** Test Documents" applies.

The cover sheet can be used as an abstract.

Contents

The report contains a total of 11 pages

ift Rosenheim GmbH
Geschäftsführer:
Dipl.-Ing. (FH) Ulrich Sieberath
Dr. Jochen Peichl

Theodor-Gietl-Str. 7 - 9
D-83026 Rosenheim
Tel.: +49 (0)8031/261-0
Fax: +49 (0)8031/261-290
www.ift-rosenheim.de

Sitz: 83026 Rosenheim
AG Traunstein, HRB 14763
Sparkasse Rosenheim
Kto. 3822
BLZ 711 500 00

Notified Body Nr.: 0757
Anerkannte PÜZ-Stelle: BAY 18
DAP-PL-0808.99
DAP-ZE-2288.00
TGA-ZM-16-93-00
TGA-ZM-16-93-60

1 Object

1.1 Description of test specimen

Product	Single leaf sliding window with fixed sidelight
Manufacturer	Asaş Aluminyum Sanayi VE Ticaret A.S.-PVC
Date of manufacture	January 2010
System	veratec / asaşpen 7400 Sürme Sistem (7406) / Standard
Type of opening / Opening directions	Sliding
Frame material	PVC-U/white
Overall frame dimensions (W x H)	1,700 mm x 1,500 mm
Overall casement dimensions (W x H)	841 mm x 1405 mm
Casement weight	29.35 kg
Frame member	7406 with steel bracing DS01026, further details are given in drawings
Frame joint	mitred and welded
Additional profile / Frame joint	Cover profile ALKP10592 with brush gasket SA01005 with intermediate banner, aluminium, horizontal at the bottom, butt-jointed at fixed sidelight and casement member, screwed with casement member, additional elastic sealant at corners Roller guiding profile 4725, clipped on casement member, butt-jointed at casement member Groove gasket CC01008, continuous, clipped on casement member, butt-jointed in corners
Casement member	7402 with steel bracing DS01015, further details are given in drawings
Frame joint	mitred and welded
Additional profile / Frame joint	Cover bar 7404, each a sash, vertical at central jamb, at top and at bottom flushed with sash, screwed on sash
Rebate design	
Rebate drainage	in rebate 4 slots 5 x 25 mm, outward 4 slots 5 x 25 mm, with cover caps TT02003
Rebate seal (material, manufacturer, corner design)	
External	Each sash: brush gasket SA01005 with intermediate banner, supplier Asaş Aluminyum Sanayi VE Ticaret A.S.-PVC, at bottom, at top and lock side, butt-jointed in corners
Internal	Each sash: brush gasket SA01005 with intermediate banner, supplier Asaş Aluminyum Sanayi VE Ticaret A.S.-PVC, at bottom, at top and lock side, butt-jointed in corners
Pressure equalization	without constructive pressure equalization

Infill panel	Insulating glass unit, configuration 4 / 12 / 4
Incorporation of infill panels Glazing gasket (material, manufacturer, corner design)	
External	co-extruded sealing profile 1017, TPV, grey, supplier Asaş Aluminyum Sanayi VE Ticaret A.S.-PVC., continuous, mitred and welded
Internal	Glazing bead 5206 with co-extruded glazing gasket, TPV, grey, supplier Asaş Aluminyum Sanayi VE Ticaret A.S.-PVC, continuous, mitred and butt-jointed
Vapour pressure equalization	Sash: below and at top each 2 slots 5 mm x 22 mm inside rebate, below and at top each 2 slots 5 mm x 22 mm to outside front Fixed sidelight: below and at top each 2 slots 5 mm x 22 mm inside rebate, below and at top each 2 slots 5 mm x 22 mm to outside front
Hardware	
Type / Manufacturer	Sliding fitting, Gretsch Unitas GmbH
Hinges / bearings	2 rollers
Number of locks	at hinge side 3
Maximum locking distance	750 mm
Position of locks	neutral

1.2 Representation of test specimen

The constructional details were checked solely for the characteristics to be classified. The drawings are based on unchanged documentation provided by the client.

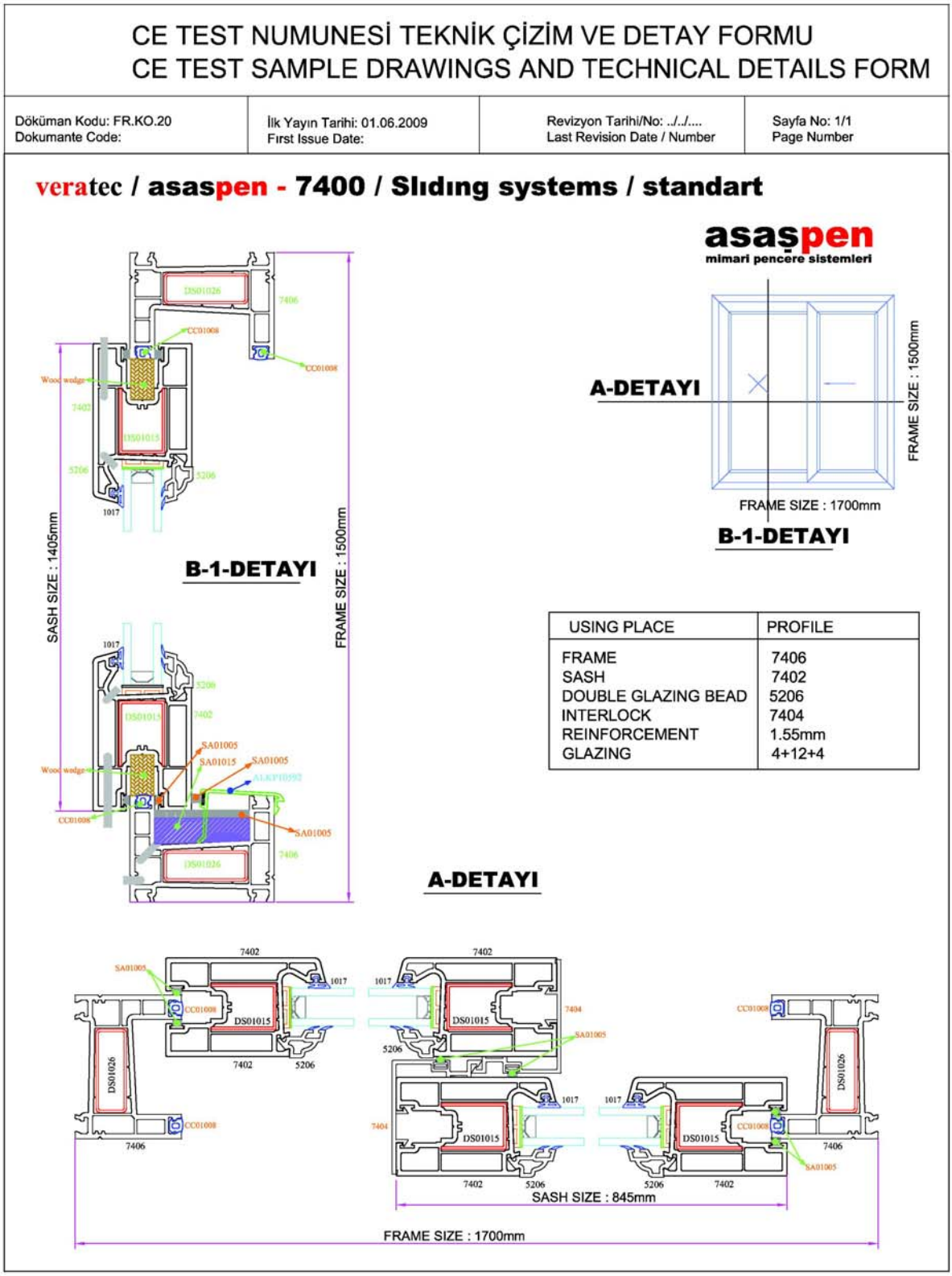


Fig. 1 Drawing of test specimen / Fixed sidelight

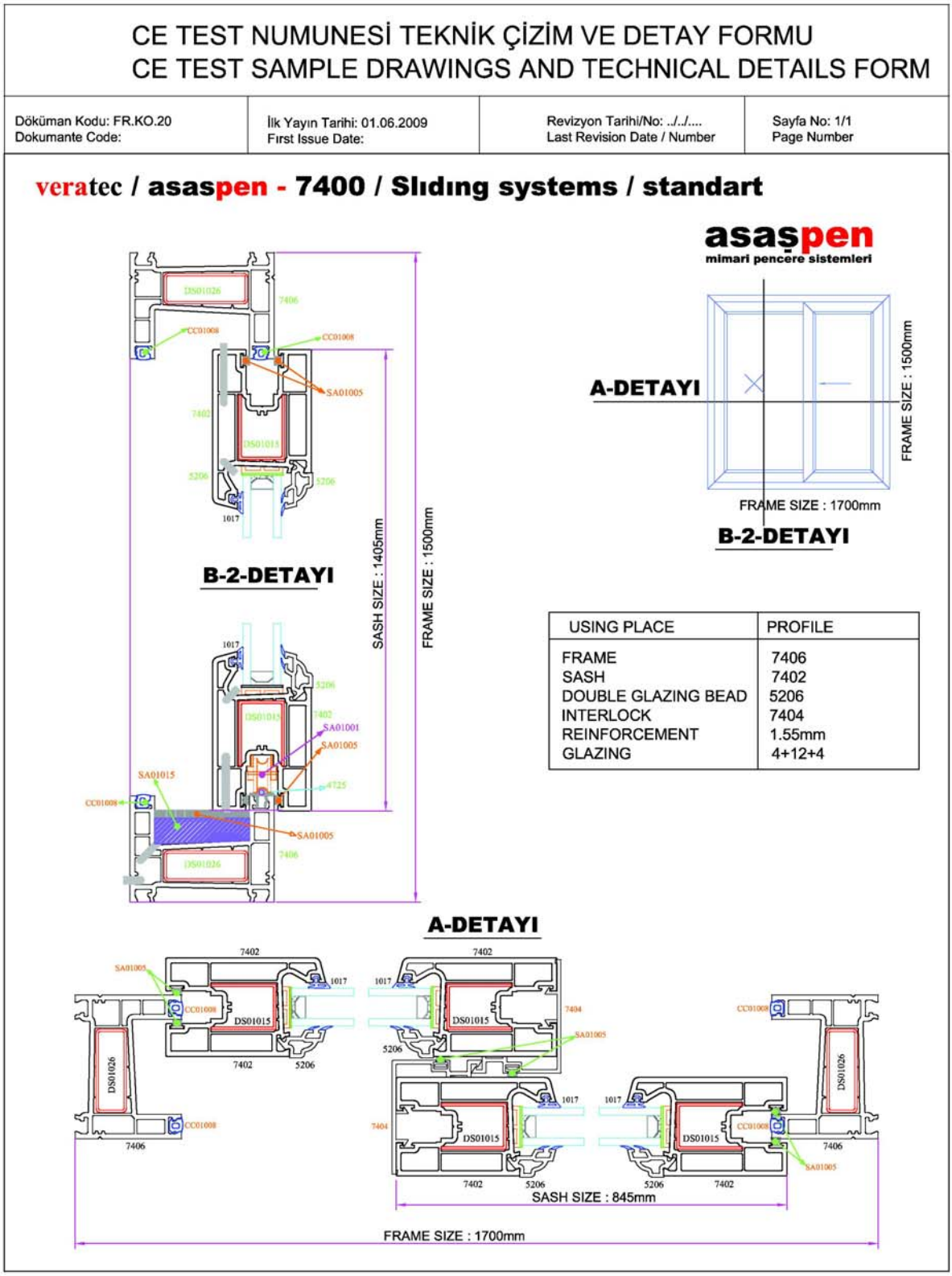


Fig. 2 Drawing of test specimen / Casement

2 Procedure

2.1 Sampling

The test specimens were selected by the client.

The client has provided to the **ift** a sampling report dated 16 April 2010

Number	1
Delivered on	26 January 2010 by the client
Registration No.	4

2.2 Methods

Basis

EN 1026: 2000-06	Windows and Doors – Air permeability – Test method
EN 1027: 2000-06	Windows and Doors – Watertightness – Test method
EN 12211: 2000-06	Windows and Doors – Resistance to wind load – Test method
EN 12046-1: 2003-11	Operating forces – Test method – Part 1: Windows
EN 14609: 2004-06	Windows – Determination of the resistance to static torsion

Classification standards

EN 12207: 2000-06	Windows and Doors – Air permeability – Classification
EN 12208: 2000-06	Windows and Doors – Watertightness – Classification
EN 12210: 2002-07	Windows and Doors – Resistance to wind load – Classification
EN 13115: 2001-07	Windows – Classification mechanical properties – Racking, torsion and operating forces
Boundary conditions	as specified by the standards requirements
Deviation	There were no deviations from the test methods and test conditions.

2.3 Test equipment

Window test bench	Device No.: 26021
Displacement transducer	Device No.: 26021
Torque meter	Device No.: 26021

2.4 Testing

Date/Period	28 January 2010
Test director	Dipl.-Ing. (FH) Robert Kolacny
Test engineer	Dipl.-Ing. (FH) Atilla Özçelik

2.5 Test sequence

No.	Type of test	Test standard	Classification standard
1.	Operating forces	EN 12046-1	EN 13115
2.	Air permeability	EN 1026	EN 12207
3.	Resistance to wind load 3.1 Deflection 3.2 Repeat test of positive/negative pressures	EN 12211	EN 12210
4.	Repeat test of air permeability	EN 1026	EN 12207
5.	Watertightness	EN 1027	EN 12208
6.	3.3 Resistance to wind load – Safety test	EN 12211	EN 12210
7.	Load-bearing capacity of safety devices	EN 14609	Requirements according to EN 14351-1

3 Detailed results

Test record

Specimen	Single leaf sliding window with fixed sidelight					
Project No.	102 42802					
Client	Asas	Size of window frame	1700	x	1500	mm
System	veratec/asaspen7400 Sürme	Size of active casement	845,0	x	1405	mm
Frame material	PVC/U white	Size of inactive casement				mm
Date of test	28 january 2010	Area of test specimen	2,6	m²		
Tester	Özcelik	Length of opening joints	4,5	m		
Specimen No.	4	Casement weight	29,4	kg		
Date of delivery	26 january 2010	Temperature	19,7	° C		
Date of manufacture	january 2010	Air humidity	37,4	%		
Attended by:	Yenigün, Yüksel Hüseyin, Bakirci	Air pressure	1002	hPa		

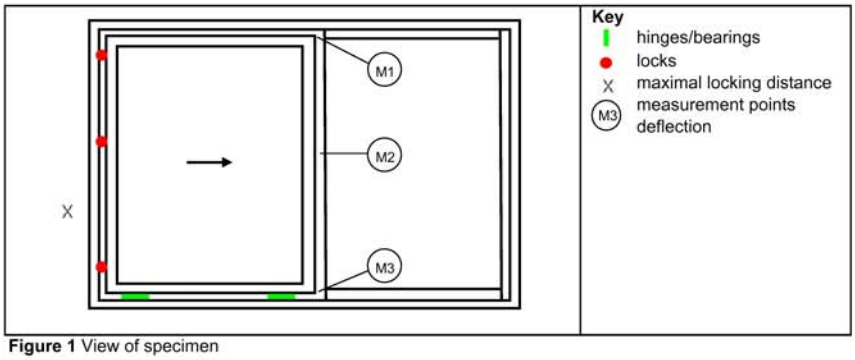


Figure 1 View of specimen

1 Operating forces - Test according to EN 12046

Table: Classification

Resistance to operating forces	Class 0	Class 1	Class 2
a) Casement or sash	-	100 N	30 N
b) Hardware			
1) Lever handles (hand operated)	-	100 N or 10 Nm	30 N or 5 Nm
2) Finger operated	-	50 N or 5 Nm	20 N or 2 Nm

Table: Measurement of operating forces

Individual measured	1	2	3	Average value
in N	79,1	75,4	81,1	78,5

Classification according to EN 13115	Class	1

2 Air permeability - Test according to EN 1026

Table: Air permeability at positive wind pressure

Measured results at positive wind pressure	Pressure differential in Pa		50	100	150	200	250	300	450	600
	Flow rate (volume)	m³/h	10,6	17,0	21,8	26,3	30,6	33,9	43,9	53,4
	Joint length-related	m³/hm	2,36	3,78	4,84	5,84	6,80	7,53	9,76	11,87
	Overall area-related	m³/hm²	4,16	6,67	8,55	10,31	12,00	13,29	17,22	20,94

Table: Air permeability at negative wind pressure

Measured results at negative wind pressure	Pressure differential in Pa		50	100	150	200	250	300	450	600
	Flow rate (volume)	m³/h	12,9	17,8	21,9	25,6	28,6	31,9	39,5	46,1
	Joint length-related	m³/hm	2,87	3,96	4,87	5,69	6,36	7,09	8,78	10,24
	Overall area-related	m³/hm²	5,06	6,98	8,59	10,04	11,22	12,51	15,49	18,08

Table: Air permeability from average values from positive and negative wind pressures

Average value from positive and negative wind pressures	Pressure differential in Pa		50	100	150	200	250	300	450	600
	Flow rate (volume)	m³/h	11,8	17,4	21,9	26,0	29,6	32,9	41,7	49,8
	Joint length-related	m³/hm	2,61	3,87	4,86	5,77	6,58	7,31	9,27	11,06
	Overall area-related	m³/hm²	4,61	6,82	8,57	10,18	11,61	12,90	16,35	19,51

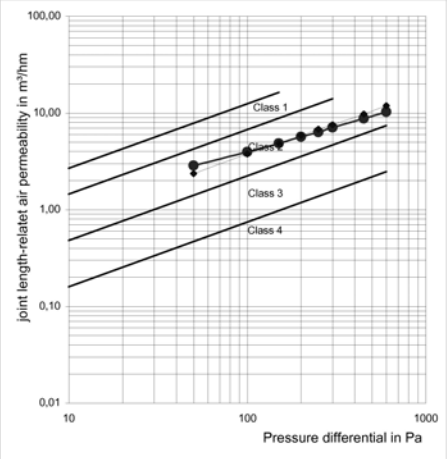


Diagram: Joint length-related air permeability (positive and negative wind pressures)

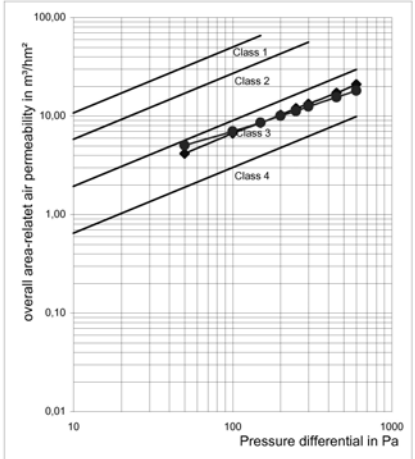


Diagram: Overall area-related air permeability (positive and negative wind pressures)

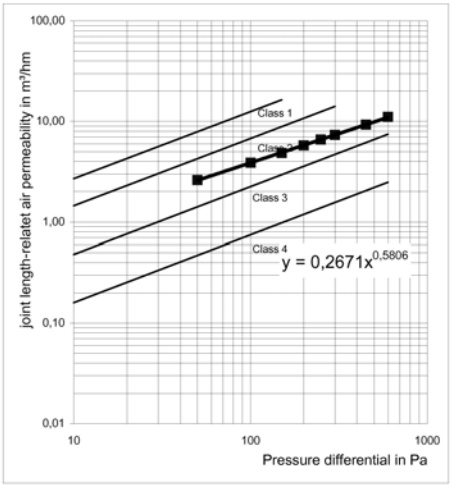


Diagram: Joint length-related air permeability (average value from positive and negative wind pressures)

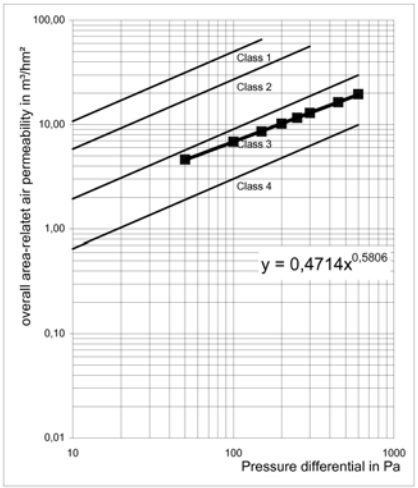


Diagram: Overall area-related air permeability (average value from positive and negative wind pressures)

Table: Measured results

Reference air permeability related to joint length	Q100 =	0,46	m³/hm
Reference air permeability related to overall area	Q100 =	1,46	m³/hm²
Air permeability related to joint length	Class	2	
Air permeability related to overall area	Class	3	
Total classification according to EN 12207	**Class**	**3**	

Classification is based on the average values of table: Air permeability from average values from positive and negative wind pressures

3 Resistance to wind load - Test according to EN 12211
3.1 Deflection under wind load

Maximum test pressure: ± 1200 Pa 3 pressure pulses of 1320 Pa

Table: Maximum deflection for classification at effective span l = 1405 mm

Class		maximum permissible relative deflection in mm
A	(l/150)	9,4
B	(l/200)	7,0
C	(l/300)	4,7

Table: Measured results of frontal deflection in mm at negative / positive wind pressures

		Positive wind pressure					Negative wind pressure				
	Class	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
Measured results of frontal deflection in mm	**p_1 in Pa**	400	800	1200	1600	2000	-400	-800	-1200	-1600	-2000
	M1 in mm	0,6	1,2	1,9			-0,9	-1,6	-2,1		
	M2 in mm	1,9	4,1	6,4			-2,2	-4,3	-6,5		
	M3 in mm	0,5	1,2	1,9			-0,8	-1,3	-1,9		
	f_{rel} in mm	1,4	2,9	4,5			-1,4	-2,9	-4,5		
	l/f_{rel}	1041	484	312			-1041	-493	-312		

Table: Remaining deformation measured after 60 s at 0 Pa

		Positiv pressure	Negativ pressure
Remaining deformation	**M1 in mm**	0,03	0,33
	M2 in mm	0,14	0,70
	M3 in mm	0,02	0,24
	f_{rel} in mm	0,1	0,4

Key

p_1	Test pressure
M1, M2, M3,...	frontal dislodgement at measurement points M1, M2, M3,...
f	frontal deflection

Classification according to EN 12210*)	**Class C3 / B3**

*) Classification is based on the lowest evaluation obtained from negative / positive wind pressures.

3.2 Dynamic wind loads (negative / positive pressures)

	Class	1	2	3	4	5
p_2	Pa	200	400	600	800	1000
passed				✓		

50 cycles at p_2 ± 600 Pa
No malfunctions were detected.

Classification according to EN 12210	**Class 3**

4 Repeat test of air permeability - Test according to EN 1026

Subsequent to the test of resistance to wind load by application of test pressures p_1 and p_2, the upper limit of the achieved air permeability class must not be exceeded by more than 20% as set out by EN 12207 (Clause 2 of this test record).
The requirements were **fulfilled.**

5 Watertightness - Test according to EN 1027

No water penetration at up to 150 Pa detected.

Classification according to EN 12208	**Class 4A**

3.3 Resistance to wind load - Test according to EN 12211 - Safety test

		positive wind pressure					negative wind pressure				
	Class	1	2	3	4	5	1	2	3	4	5
p_2	Pa	600	1200	1800	2400	3000	-600	-1200	-1800	-2400	-3000
passed				✓					✓		

Safety test passed at up to p_3 ± 1800 Pa passed.

Classification according to EN 12210	**Class** 3

Total classification according to EN 12210

Deflection at test perssure p_1 *)	± 1200 Pa	**Class**	**C3 / B3**
Test - at repeated pressure p_2	± 600 Pa	**Class**	**3**
Safety test - pressure p_3	± 1800 Pa	**Class**	**3**
Total classification) Resistance to wind load**		**Class**	**C3 / B3**

*) Classification ist based on the lowest evaluation from negative and positive wind pressures.
**) Total classification ist based on the lowest evaluation of each individual class.

6 Load-bearing capacity of safety devices

The testing of the safety device is carried out with a load of 350N for 60s.
No malfunctions were detected at the test specimen.

Threshold according to EN 14351	**Requirements fulfilled**

ift Rosenheim
28 january 2010