

Evidence of Performance

Resistance to wind load
Watertightness
Air permeability

Test Report 102 42739/3e



Client **Kompen PVC Yapi ve Insaat Malzemeleri Sanayi Ticaret A.S.**
Istanbul Yolu 45. km. Ladik Mevkii

42435 Sarayönü
Turkey

Basis

EN 14351-1 : 2006-03

Test standards:

EN 1026 : 2000-06

EN 1027 : 2000-06

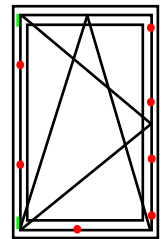
EN 12211 : 2000-06

EN 12046-1 : 2003-11

EN 14609 : 2004-03

Corresponds to the national standard (DIN EN)

Representation



Product	Single leaf tilt and turn window
System	KOM 700
Overall dimensions (w x H)	800 mm x 1,600 mm
Frame material	PVC-U/white
Special features	Bracings mitred and mounted without cutback.

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.

Resistance to wind load – EN 12210



Class E2100

Watertightness – EN 12208



Class 9A

Air permeability – EN 12207



Class 4

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TGA-ZM-16-93-00
TGA-ZM-16-93-60

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 10 pages

1 Object

1.1 Description of test specimen

Product	Single leaf tilt and turn window
Manufacturer	KOMPEN PVC Yapi ve İnşaat Malzemeleri Sanayi Ticaret A.Ş.
Date of manufacture	June 2010
System	KOM 700
Type of opening / Opening directions	tilt and turn, DIN left, inward opening
Frame material	PVC-U/white
Overall frame dimensions (W x H)	800 mm x 1,600 mm
Overall casement dimensions (W x H)	716 x 1,516 mm
Casement weight	27.85 kg
Frame member	KOM 704 with steel bracing Prime D.S 04, further details are given in drawings
Frame joint	PVC profiles mitred and welded Bracings mitred and mounted without cutback.
Casement member	KOM 702 with steel bracing Prime D.S 03, further details are given in drawings
Frame joint	PVC profiles mitred and welded Bracings mitred and mounted without cutback.
Rebate design	
Rebate drainage	in rebate and to the outside each 2 slots 5 mm x 30 mm with cover caps
Rebate seal (material, manufacturer, corner design)	
External	Sealing profile NK-02, EPDM, black, company Secil, continuous, notched in corners, at top centre butt-jointed
Internal	Sealing profile NK-02, EPDM, black, company Secil, continuous, notched in corners, at top centre butt-jointed
Pressure equalization	Without pressure equalization.
Infill panel	insulating glass unit, configuration <u>4</u> / 16 / <u>4</u>
Incorporation of infill panels	
Glazing gasket (material, manufacturer, corner design)	
External	Glazing gasket NC-01, EPDM, black, company KOMPEN, continuous, notched in corners, at top centre butt-jointed
Internal	Glazing bead KOM 608 with coextruded glazing gasket, PVC, black, continuous, mitred and butt-jointed
Vapour pressure equalization	At bottom 2 slots 5 mm x 30 mm on lock side and hinge side at top each 1 slot 5 mm x 30 mm



Hardware

Type / Manufacturer	Uni Jet, Gretsch-Unitas GmbH
Hinges / bearings	1 corner pivot, 1 tilt mechanism pivot
Number of locks	on hinge side 2, on lock side 4, at bottom 1
Maximum locking distance	760 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.

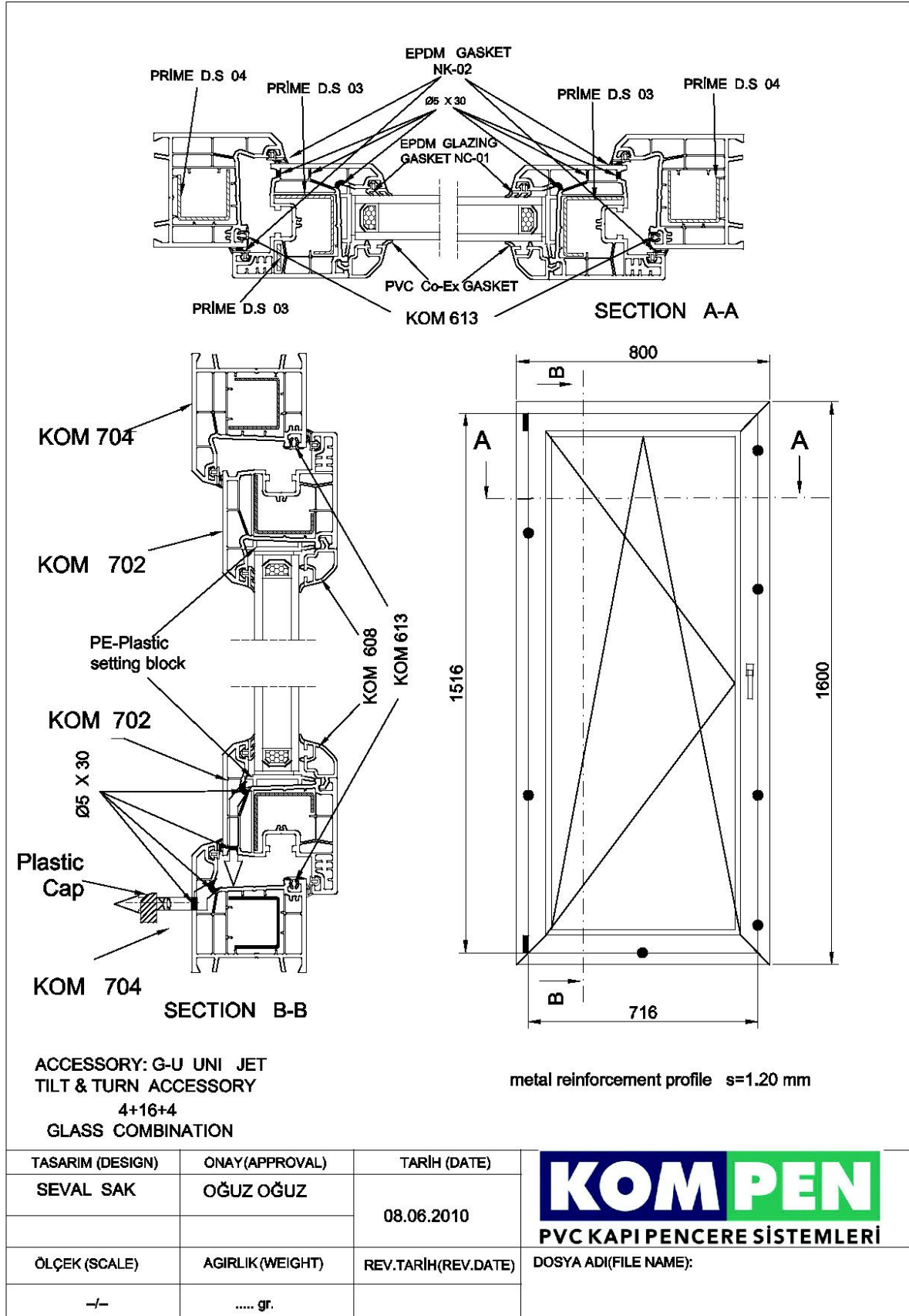


Fig. 1 Drawing of test specimen



2 Procedure

2.1 Sampling

The test specimens were selected by the client.

Number	1
Delivered on	6 June 2010 by the client
Registration No.	3

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	17 June 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 tilt and turn window		
Project No.	102 42739		
Client	KOMPEN	Size of window frame	800 x 1600 mm
System	KOM 700	Size of active casement	716 x 1516 mm
Frame material	PVC/U white	Size of inactive casement	mm
Date of test	17 June 2010	Area of test specimen	1,3 m ²
Tester	Özcelik	Length of opening joints	4,5 m
Specimen No.	3	Casement weight	27,9 kg
Date of delivery	16 June 2010	Temperature	26,9 °C
Date of manufacture	June 2010	Air humidity	72 %
Attended by:	Herr Ali Erik	Air pressure	1007 hPa
	Herr Adem Öz		

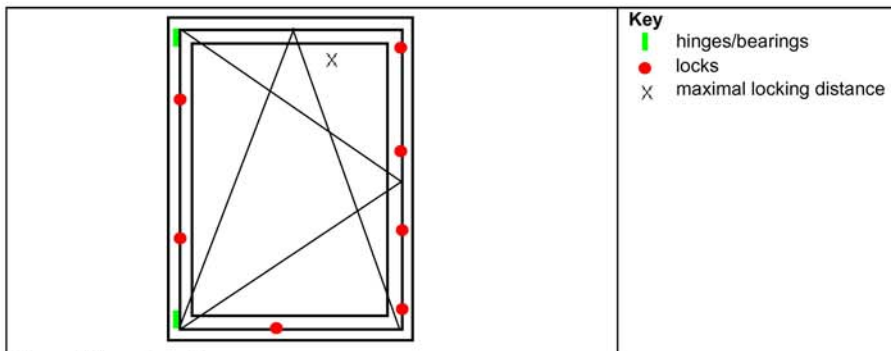


Figure 1 View of specimen

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 operatet	-	50 N or 5 Nm	20 N or 2 Nm

Table: Measurement of operating forces

Individual measured	1	2	3	Average value
in Nm	7,0	7,0	6,8	6,9

Classification according to EN 13115	Class 1
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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) m ³ /h	0,2	0,5	0,8	1,0	1,2	1,5	3,5
	Joint length-related m ³ /hm	*) 0,11	0,18	0,22	0,27	0,34	0,78	1,72	
	Overall area-related m ³ /hm ²	*) 0,39	0,63	0,78	0,94	1,17	2,73	6,02	

*) The measured values were below the 0,5m³/h leak flow volume of the displacement transducer. The precision of measurements is 0,1m³/h.

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) m ³ /h	0,4	0,7	0,9	1,0	1,2	1,5	2,7
	Joint length-related m ³ /hm	*) 0,16	0,20	0,22	0,27	0,34	0,60	1,12	
	Overall area-related m ³ /hm ²	*) 0,55	0,70	0,78	0,94	1,17	2,11	3,91	

*) The measured values were below the 0,5m³/h leak flow volume of the displacement transducer. The precision of measurements is 0,1m³/h.

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) m ³ /h	0,3	0,6	0,9	1,0	1,2	1,5	3,1
	Joint length-related m ³ /hm	*) 0,13	0,19	0,22	0,27	0,34	0,69	1,42	
	Overall area-related m ³ /hm ²	*) 0,47	0,66	0,78	0,94	1,17	2,42	4,96	

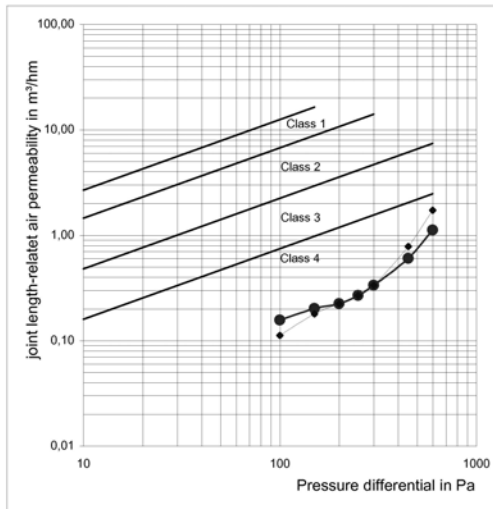


Diagram: Joint length-related air permeability (positive and negative wind pressures)

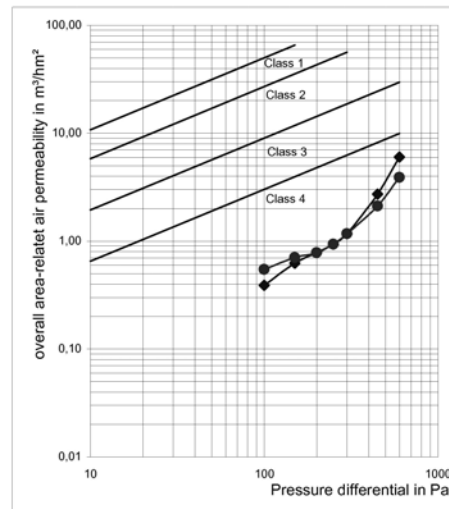


Diagram: Overall area-related air permeability (positive and negative wind pressures)

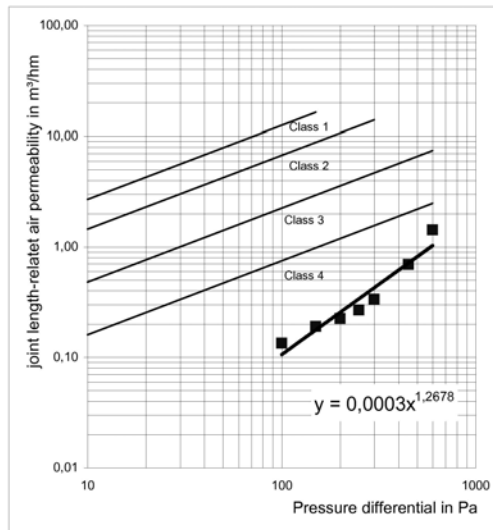


Diagram: Joint length-related air permeability (average value from positive and negative wind pressures)

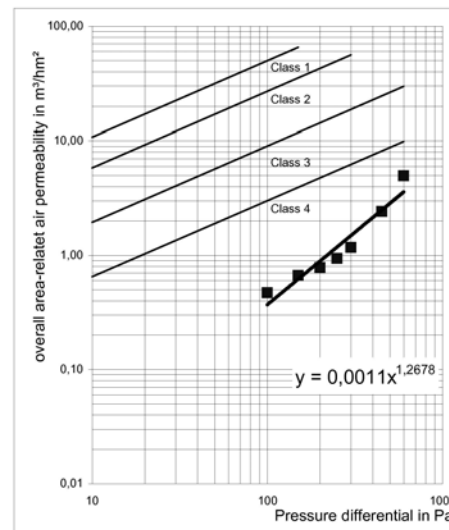


Diagram: Overall area-related air permeability (average value from positive and negative wind pressures)

Table: Measured results

Reference air permeability related to joint length	Q100 = 0,13 m³/hm
Reference air permeability related to overall area	Q100 = 0,44 m³/hm²
Air permeability related to joint length	Class 4
Air permeability related to overall area	Class 4
Total classification according to EN 12207	Class 4

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: \pm 2100 Pa 3 pressure pulses of 2310 Pa

Deflection was not measured because due to the perimeter locking and the existing locking distance no deformation of the frame members $> l/200$ is likely to occur at the specified wind loads. The test specimen was exposed to a load \pm 2100 Pa as specified by EN 12211.

Classification according to EN 12210 ¹⁾	Class	CE2100
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¹⁾ 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	E2100
p_2 Pa	200	400	600	800	1000	1050
passed						✓

50 cycles at $p_2 \pm$ 1050 Pa

No malfunctions were detected.

Classification according to EN 12210	Class	CE2100
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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 r_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 600 Pa detected.

Classification according to EN 12208	Class	9A
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3.3 Resistance to wind load - Test according to EN 12211 - Safety test

positive wind pressure						
Class	1	2	3	4	5	CE2100
p ₂ Pa	600	1200	1800	2400	3000	3150
passed						✓

negativ wind pressure						
Class	1	2	3	4	5	CE2100
p ₂ Pa	600	1200	1800	2400	3000	3150
passed						✓

Safety test passed at up to p₃ ± 3150 Pa passed.

Classification according to EN 12210	Class CE2100
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Total classification according to EN 12210

Deflection at test perssure p ₁)	± 2100 Pa	Class	CE2100
Test - at repeated pressure p ₂	± 1050 Pa	Class	CE2100
Safety test - pressure p ₃	± 3150 Pa	Class	CE2100
Total classification**) Resistance to wind load		Class	CE2100

*) 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
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ift Rosenheim
17 June 2010