

PRÜFINSTITUT

für Bauelemente GmbH

Zweibrücker Str. 217 ■ D-66954 Pirmasens

Test Report

F 2006 / 06

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Annex 1

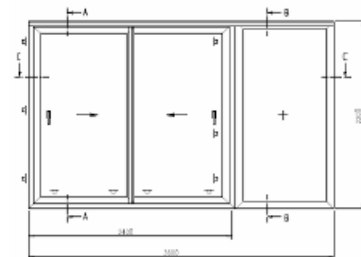
Client: Profine GmbH
Zweibrücker Straße 200
D-66954 Pirmasens

Specification: Windows – Methods of test
Australian Standard AS 4420

Item Tested: Sliding window with fixed light
System Kömmerling SF 2

Test Date: 11.08.2006

Test Performance:	Deflection / span ratio	1:180 at 1000 Pa
	Operation force	Passed
	Air infiltration	passed
	Water Resistance	300 Pa
	Ultimate strength	1500 Pa



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Client	Profine GmbH Zweibrücker Straße 200, D-66954 Pirmasens	

1. General Information

Profine GmbH, Germany commissioned the PIB GmbH (Test institute for building elements) in Pirmasens, Germany on June 6th 2006 to perform a testing of a window according to the Australian Standard for windows testing AS 4420 in accordance to the requirements of AS 2047

The item tested is a Sliding Window with fixed light. The element size is 3.6 x 2.2 [m]. Date of delivery of the test specimen June 6th 2006.

The client supplied the PIB with drawings, description of the test samples including profile references and a manual. These documents represent accurately the test sample in all respects.

2. Description of the sample

Sample type:	Sliding window with fixed light		Manufacturer:	profine GmbH D-66954 Pirmasens	
System:	Kömmerling SF 2		Profiles		
Material:	PVC-U		Profiles reference	Frame	1385
Element size:	3600 x 2200 (w x h)	[mm]		Sash	1386
	7.9	[m ²]			
Sash size:	1205 x 2087	[mm]		Mullion	1385
Opening joint:	13.2	[m]		Glazing bead	1430.1 / 0393
Construction:	Mitred, welded and grooved joints	[mm]	Reinforcement reference	Frame	9207
Glass:	Doubled glazed, 4-16-4, sealed unit	[mm]		Sash	9116
Fittings:	4 point GU sliding system operated by a single handle			Sash middle Mullion	9116 plus 9120 9120
Drainage:	<u>Frame:</u>		Gaskets	Fixed light	9023
				Sash:	9090 and 9091
	<u>Sash:</u> 2 slots 5x15 mm top and bottom per sash			Glazing	Inner: coextruded Outer: 9045.1

3. Performance

The test rig is a model from K+S Schulten, Germany. On the rig elements up to 3.7 m wide and 2.5 m high can be tested. The centrifugal fan reaches 250m³/h and a maximum pressure difference of +/- 3000 Pa.

The test sequences are programmed and the test performance is operated by the computer. All data are electronically measured and saved on a data base.

The test elements were mounted in a metal subframe to fix on the test rig.

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4. Examination and Test

Date of Test:	11th August 2006	Temperature °C:	21	Air pressure [hPa]	1008
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4.1 Deflection Test according to AS 4420.2

The test procedure follows AS 4420.2. The span (A-B) was 2025 mm

Maximum deflection at l/150 -> 13.5 mm, at l/180 -> 11.25 mm and at l/250 -> 8.1 mm

4.1.1 Mullion fixed glazing

Pressure [Pa]	Duration [min]	Displacement [mm]			Mid span deflection [mm]	deflection ratio
		1 (A,top)	2 (C,mid)			
0	1	0,0	0,0	0,0	0,0	-
400	1	0,8	5,8	1,2	4,8	1:422
800	1	1,8	11,4	2,6	9,2	1:220
1000	1	2,3	14,2	3,5	11,2	1:180
1250	1	2,9	17,0	4,7	13,2	1:153
1500	1	3,0	17,8	5,0	13,8	1:147
0	2	0,1	1,7	0,8	1,3	-

Pressure [Pa]	Duration [min]	Displacement [mm]			Mid span deflection [mm]	Deflection ratio
		1 (A,top)	2 (C,mid)	3 (B,bottom)		
0	1	-0,8	-2,9	-0,5	-2,3	-
- 400	1	-1,6	-5,9	-1,1	-4,6	1:440
- 800	1	-2,3	-8,9	-1,7	-6,9	1:293
- 1000	1	-3,0	-11,9	-2,3	-9,2	1:220
- 1250	1	-3,6	-14,8	-2,9	-11,6	1:175
- 1500	1	-4,3	-18,0	-3,5	-14,1	1:144
0	2	-0,5	-1,6	-0,6	-1,1	

Result:

Building type	Max deflection ratio	Serviceability design wind pressure
housing	1 :150	1 000 Pa
residential	1 :180	1 000 Pa
commercial	1 :250	400 Pa

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4.1.2 Middle part sliding sash

The test procedure follows AS 4420.2. The span (A-B) was 2025 mm
Maximum deflection at l/150 ->13.5 mm, at l/180 -> 11.25 mm and at l/250 -> 8.1 mm

Pressure [Pa]	Duration [min]	Displacement [mm]			Mid span deflection [mm]	Deflection ratio
		1 (A,top)	2 (C,mid)	3 (B,bottom)		
0	1	0,0	0,0	0,0	0,0	-
400	1	1,2	2,1	1,6	0,7	1:2893
800	1	2,4	4,3	3,3	1,4	1:2835
1000	1	3,7	7,1	6,7	1,9	1:1066
1250	1	4,0	7,6	7,0	2,1	1:964
1500	1	4,2	8,0	7,4	2,2	1:920
0	2					

Pressure [Pa]	Duration [min]	Displacement [mm]			Mid span deflection [mm]	Maximum l/150 [mm]
		1 (A,top)	2 (C,mid)	3 (B,bottom)		
0	1	0,0	0,0	0,0	0,0	-
- 400	1	-1,1	-2,3	-1,6	-1,0	1:2025
- 800	1	-2,2	-4,2	-3,0	-1,6	1:1266
- 1000	1	-3,5	-7,0	-6,5	-2,0	1:1013
- 1250	1	-3,8	-7,2	-6,7	-2,0	1:1013
- 1500	1	-4,0	-7,7	-7,0	-2,2	1:920
0	2					

4.2 Operation force test according to AS 4420.3

The test procedure follows AS 4420.3

Force	Sliding window type		
to open handle	7.5 Nm		
To open sash		To initiate	To sustain
	Left sash	90 N	55 N
	Right sash	85 N	55 N

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4.3 Air Infiltration Test according to AS 4420.4

The test procedure follows AS 4420.4

Pressure [Pa]	Duration [sec]	Total [m³/h]	Total [L/s] *0.278	Air infiltration L/sm² Area = 7.9 m²
0	15	0	0	0
75	15	8,6	2,4	0,3
150	15	13,1	3,6	0,46
0	15	0	0	0
-75	15	-8,1	2,25	0,29
-150	15	-12,8	3,6	0,46

The maximum air infiltration according to AS 2047 should be less than 1 l/sm² at 75 Pa and less than 1.6 l/sm² at 150 Pa for air-conditioned building types. The measured air infiltration fulfils this requirement.

Air infiltration test for air conditioned building type

passed

4.4 Water penetration test according to AS 4420.5

The test procedure follows AS 4420.5 Spraying Method (unprotected mounting) with a jet line and an amount of 3l/(min·m²). Tilt of the axis 24° to horizontal line.

Result:

pressure difference [Pa]		duration [s]		water [l/m²]	
<i>Nominal</i>	<i>actual</i>	<i>Nominal</i>	<i>actual</i>	<i>nominal</i>	<i>actual</i>
0	0	300	300	22	21.4
300	300	900	900	22	21.9

No occurrence of leakage at 300 Pa.

Rating: This window is classified for water penetration resistance in N 5

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4.5 Ultimate Strength test according to AS 4420.6

The test procedure follows AS 4420.6.

Within 1min. the differential pressure has been increased to the determined test pressure of 1500 Pa maintained for 10 sec. No collapse of the element, described in AS 2047 had been observed.

Rating: This window is classified for ultimate strength in N 3

Pirmasens, August 18th 2006

Certified by



i.V. Dr. Claus Doernfeld
Head of Laboratory



tested by



i. A. Walter Kau
Test Engineer

Client

Profine GmbH

Zweibrücker Straße 200, D-66954 Pirmasens

