Deutscher Akkreditierungs Rat

DAP–PL-03228.00

PIB

PRÜFINSTITUT

für Bauelemente

Zweibrücker Str. 217 ▪ D-66954 Pirmasens

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Annex 0

Client:	Profine GmbH Zweibrücker Straße 200 D-66954 Pirmasens	
Specification:	Windows – Methods of test Australian Standard AS 4420	
Item Tested:	2 Sash Outward Opening System Kömmerling C 70 Gold	
Test Date:	2010-03-12	
Test Results:	Deflection / span ratio	1:321 at 1500 Pa
	Operation force	Passed
	Air infiltration	Passed
	Water Resistance	600 Pa
	Ultimate strength	2500 Pa

1. General Information

Profine GmbH, Germany commissioned the PIB (Test institute for building elements) in Pirmasens, Germany on February 26th 2010 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 2-Sash Outward Opening. The element size is 1.23 x 1.48 [m]. Date of delivery of the test specimen February 26th 2010.

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:	2-Sash Outward Opening		Manufacturer:	profine GmbH Berlin	
System:	**Kömmerling C70 Gold**		**Profiles**		
Material:	PVC-U		Profiles reference	Frame	7502
Element size:	1230 x 1480 (w x h) 1.82	[mm] [m²]		Sash	7581
Sash size:	586 x 1390	[mm]		Mullion	7533
Opening joint:	7904	[m]		Glazing bead	320
Construction:	Mitred, welded and grooved joints	[mm]	Reinforcement reference	Frame	676
Glass:	Doubled glazed, 4-16-4, sealed unit	[mm]		Sash	675
Fittings:	Maco friction stays operated by a single handle			Mullion	676
Drainage:	Frame: 2 slots 5x30 mm per field from the rebate into the pre chamber and 2 slots 5x30 mm from the pre-chamber to outside		gaskets	Frame	PCE
				Sash:	PCE
	Sash: 2 slots 5x25 mm top and bottom per sash			Glazing	Inner: PCE Outer: PCE

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 van 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.

4. Examination and Test

Date of Test:	12th March 2010	Temperature °C:	20	Air pressure [hPa]	1008

4.1 Deflection Test according to AS 4420.2

The test procedure follows AS 4420.2. The span (A-B) was 1445 mm

Maximum deflection at l/150 ->9.6 mm, at l/180 -> 8.0 mm and at l/250 -> 5.8 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	-
250	1	0,0	0,8	0,0	0,8	1:1806
500	1	0,0	1,6	0,0	1,6	1:903
750	1	0,1	2,5	0,2	2,3	1:628
1000	1	0,2	3,4	0,4	3,1	1:466
1250	1	0,4	4,3	0,6	3,8	1:380
1500	1	0,5	5,2	0,8	4,5	1:321
0	2	0,3	0,4	0,3	0,2	-

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	
- 250	1	0,0	-0,4	-0,2	-0,5	1:2890
- 500	1	0,0	-1,3	0,0	-1,3	1:1111
- 750	1	-0,1	-2,1	-0,1	-2,0	1:723
- 1000	1	-0,2	-2,9	-0,3	-2,7	1:535
- 1250	1	-0,3	-3,8	-0,4	-3,5	1:413
- 1500	1	-0,4	-4,6	-0,5	-4,2	1:344
0	2	-0,2	-0,4	-0,3	-0,2	-

Result:

Building type	**Max deflection ratio**	**Serviceability design wind pressure**
housing	1 :150	1 500 Pa
residential	1 :180	1 500 Pa
commercial	1 :250	1500 Pa

4.2 Operation force test according to AS 4420.3

The test procedure follows AS 4420.3

Force	Tilt and Turn
to open handle left to open handle right	3.0 Nm 3.0 Nm

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 = 1.8 m²
0	15	0	0	0
75	15	4,08	1,13	0,62
150	15	5,73	1,59	0,87
0	15	0	0	0
-75	15	5,01	1,39	0,76
-150	15	10.4	2,89	1,59

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]**	
Nominal	*actual*	*Nominal*	*actual*	*nominal*	*actual*
0	0	300	300	5,46	5,34
600	600	900	900	5,46	5,64

No occurrence of leakage at 600 Pa.

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 2500 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 4

Pirmasens, 3rd May 2010

Certified by

i.V. Dr. Claus Doernfeld
Head of Laboratory

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tested by

i. A. Walter Kau
Test Engineer