

PRÜFINSTITUT

für Bauelemente

Zweibrücker Str. 217 ■ D-66954 Pirmasens

Test Report

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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:	Tilt and Turn with fixed light System Kömmerling C 70 Gold
Test Date:	2010-03-29
Test Results:	Deflection / span ratio 1:174 at 1250 Pa Operation force Passed Air infiltration Passed Water Resistance 600 Pa Ultimate strength 2300 Pa

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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 Tilt and Turn Window with fixed light. The element size is 1.600 x 2.145 [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:	Tilt and Turn window with fixed light		Manufacturer:	profine GmbH Berlin	
System:	Kömmerling C70 Gold		Profiles		
Material:	PVC-U		Profiles reference	Frame	7507
Element size:	1600 x 2145 (w x h)	[mm]		Sash	373
	3.4	[m ²]		Mullion	7536
Sash size:	748 x 2068	[mm]		Glazing bead	320
Opening joint:	5,63	[m]		Reinforcement reference	676
Construction:	Mitred, welded and grooved joints	[mm]		Frame	677
Glass:	Doubled glazed, 4-16-4, sealed unit	[mm]		Sash	655
Fittings:	Winkhaus tilt and turn system operated by a single handle			Mullion	655
Drainage:	<u>Frame:</u> 4 slots 5x25 mm per field from the rebate into the pre chamber and 3 slots 5x25 mm from the pre-chamber to outside		gaskets	Frame	PCE
				Sash:	PCE
	Glazing			Inner: PCE Outer: PCE	
	<u>Sash:</u> 2 slots 5x25 mm top and bottom per sash				

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:	29th March 2010	Temperature °C:	20	Air pressure [hPa]	1012
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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 2105 mm

Maximum deflection at l/150 -> 14.0 mm, at l/180 -> 11.7 mm and at l/250 -> 8.4 mm

Pressure [Pa]	Duration [min]	Displacement [mm]			Mid span deflection [mm]	Deflection ratio
		1 (A,top)	2 (C,mid)	3 (B,bottom)		
0	1	-0,1	0,0	0,0	0,1	-
250	1	0,1	2,4	0,0	2,4	1:877
500	1	0,4	5,0	0,2	4,7	1:448
750	1	0,7	7,5	0,3	7,0	1:300
1000	1	0,9	10,2	0,5	9,5	1:222
1250	1	1,3	13,0	0,7	12,0	1:175
1500	1	1,6	15,7	1,0	14,4	1:46
1750	1	2,0	18,6	1,2	17,0	1:124
2000	1	2,4	21,4	1,5	19,5	1:108
0	2	0,0	0,8	0,2	0,7	-

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	-0,2	-2,3	-0,0	-2,2	1:957
- 500	1	-0,5	-5,1	-0,3	-4,7	1:448
- 750	1	-0,7	-7,7	-0,5	-7,1	1:297
- 1000	1	-1,0	-10,4	-0,7	-9,6	1:219
- 1250	1	-1,3	-13,2	-0,9	-12,1	1:174
- 1500	1	-1,5	-15,9	-1,1	-14,6	1:144
-1750	1	-1,8	-18,7	-1,3	-17,1	1:123
-2000	1	-2,0	-21,6	-1,5	-19,9	1:106
0	2	-0,2	-0,8	-0,3	-0,2	-

Result:

Building type	Max deflection ratio	Serviceability design wind pressure
housing	1 :150	1 250 Pa
residential	1 :180	1 000 Pa
commercial	1 :250	750 Pa

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4.2 Operation force test according to AS 4420.3

The test procedure follows AS 4420.3

Force	Tilt and Turn
to open handle	4.5 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 = 3.4 m²
0	15	0	0	0
75	15	3,54	0,98	0,29
150	15	6,45	1,79	0,53
0	15	0	0	0
-75	15	2,81	0,78	0,23
-150	15	4,20	1,17	0,34

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

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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/m ²]	
<i>Nominal</i>	<i>actual</i>	<i>Nominal</i>	<i>actual</i>	<i>nominal</i>	<i>actual</i>
0	0	300	300	10,3	10,4
600	600	900	900	10,3	10,3

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 1 min. the differential pressure has been increased to the determined test pressure of 2300 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



tested by



i. A. Walter Kau
Test Engineer