Test Report No:	WTH1901#1-1
Date:	09/04/2019
Testing of:	Side hung next to top hung flush casement window
Tested to:	PAS 24 : 2016
Prepared for:	Nico Manufacturing Ltd

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TEST REQUESTED BY

Origin of test request

Company Name	Nico Manufacturing Ltd
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Contact	Ian Harrison
Contact position	Sales Director

Quotation Details

Quotation No.	WTH1901
Dated:	25/03/2019

DETAILS OF TEST

Description	Flush casement window
Model / type	Side hung next to top hung
Make / Brand	Eurocell logic flush
Any special requirements	

Test Specification	PAS24:2016 Enhanced security performance requirements for doorsets and windows in the UK
Date sample received	03/04/2019
Date testing started	09/04/2019
Date testing finished	18/04/2019
Job No.	WTH1901
Any special requirements	

C.4.3 Manipulation test. - Using a variety of tools as detailed in Annex A of PAS24:2016 attempts are made to gain entry by such methods as removal of trim, insertion of tools to slide latches or bolts, undoing threaded fasteners and blows by hand to dislodge locking devices. Test a) takes place prior to infill removal test and test b) after the mechanical loading test.

Test a) Duration 15 minutes with no single technique being used for more than 3 minutes

Test b) Duration 3 minutes with the primary intention of releasing threaded fasteners exposed as a result of the mechanical loading test.

C.4.4.2 Infill medium removal test, Manual. - Using a variety of tools as detailed in Annex A of PAS24:2016 attempts are made to remove gaskets, beads, security devices and then infill medium.

Test duration is 3 minutes.

C.4.4.3 Infill medium removal test, Mechanical. - A load of 2000N is applied to each corner of the infill medium via a 150mm x 150mm wooden block and each load is held for 10 seconds. If failure is exhibited at the corners loading is continued along each section in an attempt to deglaze the window.

C.4.5 Mechanical loading test. - Loading consists of the application of a 1000N parallel to plane load which is held until a 3000N perpendicular to plane load has been applied and removed. Loads are applied to each corner and at each locking and hinge point of each opening sash. Loading cases (table C.1) and sequence of loading (figure C.14) are shown in PAS 24:2016.

C.4.6 Manual check test. - Using the tools specified in PAS 24:2016 B.4.6.2 attempts are made to gain entry by levering at any location and in any direction such that the combined location and direction of the force applied does not replicated the standard mechanical loading cases.

If entry is gained the new location and the direction of applied loads shall be noted and an additional mechanical loading test shall be performed.

Test duration 15 minutes with no single technique being used for more than 3 minutes

C.4.7 Additional mechanical loading test. - Carry out load test in accordance with C.4.5 using the loading configuration defined in C.4.6.

The samples were mounted in timber sub frames (nominal 100mm x 50mm in section).

The samples were mounted in the test rig without any twists or bends that might influence the test result.

DETAILS OF SAMPLE

Sample details	Side hung next to top hung flush casement window
Fabricator	Eurocell Building Plastics Ltd
Material:	PVC-U Eurocell profile numbers; Frame - EWS7020/7720 Sash - EWS7015 Mullion - EWS7002/7702 Reinforcement - Frame & sash, none Mullion, EWS801P
Finish	Gloss white
Lock & keeps	Lock - Nico Security espag, part nos 921151 (T/H) & 921351 (S/H) Keeps - Nico steel security keep, part number 9209
Hinges & protectors	Hinges - Nico Atlas 12" Egress easy Clean S/H sash part no 8561 Nico 24" Standard on T/H sash part no 8260 Hinge protectors - Nico Xtra bolt, part no 8100
Handle	White Inline locking handle, part number LSF1704
Fixings	Lock - TIMco 4.30 x 30mm c'sk head gimlet point Keeps - TIMco 4.3 x 30mm c'sk head gimlet point Friction hinges - TIMco 4.3 x 20mm pan head gimlet point to frame TIMco 4.3 x 25mm pan head gimlet point to sash Hinge protectors - 4.8 x 30mm Pan head gimlet point to frame & sash
Weather sealing	Co extruded gaskets
Glass (or infill)	4-20-4mm Toughened glass double glazed unit in T/H sash 4-12-4-12-4mm Toughened glass triple glazed unit in S/H sash
Glazing system	Internally bead glazed with co extruded gaskets
Sample dimensions	1500mm (H) x 1950mm (W) Mullion 750mm
Additional information	

CONCLUSIONS OF TEST

Clause No.	Test Description	Test result
C.4.3	Manipulation test a)	Pass
C.4.3	Manipulation test b)	Pass
C.4.4.2	Infill removal test - manual	Pass
C.4.4.3	Infill removal test - mechanical	Pass
C.4.5	Mechanical loading test	Pass
C.4.6	Manual check test	No entry gained
C.4.7	Additional mechanical loading test	N/A

Classification (As per clause 4.4)	W

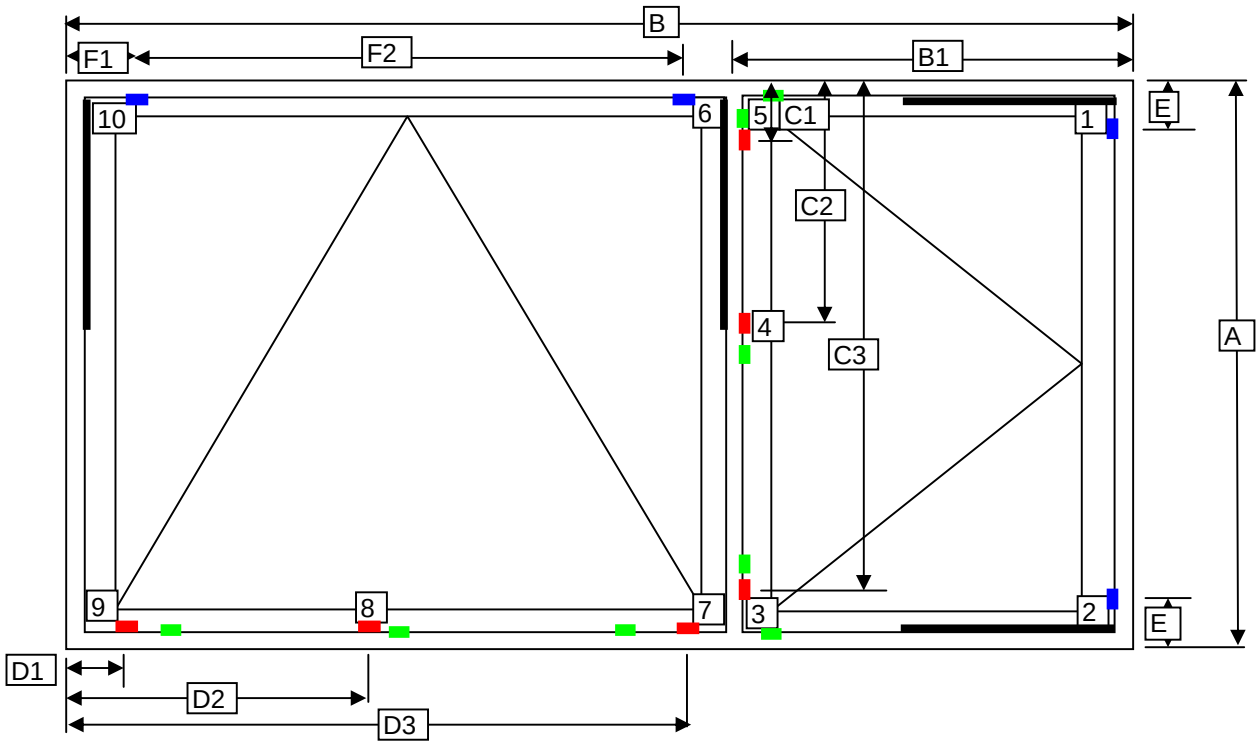
The results contained in this report apply only to the samples tested and to the specific tests carried out within this report.

Test specimen details

Details of the samples construction and hardware components is based on information supplied by the test client, while these details have been checked and verified where possible WTH accepts no responsibility for the accuracy of details supplied.

Note : The test specimens were kept in the test laboratory for a minimum of 12 hours at environmental conditions of between 15°C to 30°C, and 25% to 75% RH before each test was undertaken as specified in PAS 24:2016 Clause C.4.1

TEST WINDOW DRAWING



- Run up block
- Locking points
- Hinge protectors

A	=	1500	mm
B	=	1950	mm
B1	=	750	mm
C1	=		mm
C2	=		mm
C3	=		mm
D1	=		mm
D2	=		mm
D3	=		mm
E	=		mm
F1	=		mm
F2	=		mm

MANIPULATION TEST

Sample No	WTH1901F	Temperature	20°C	Humidity	44%RH	Date	09/04/2019

Clause 4.3 Manipulation test a)

Craft knife used to cut away sash & frame profile adjacent to centre lock point on S/H sash, paint scraper used with hand blows in attempt to disengage lockig cam. - No entry gained

Craft knife used to cut away sash & frame profile adjacent to bottom lock point, on S/H sash, 3mm flat blade screwdriver used in attempt to disengage cam. - No entry gained

Craft knife used to cut away sash profile adjacent to bottom hinge protector on S/H sash, 3mm flat blade screwdriver used in attempt to disengage hinge protectors. - No entry gained

Craft knife used to cut away sash & frame profile adjacent to centre lock point on T/H sash, paint scraper used with hand blows in attempt to disengage cam. - No entry gained

INFILL MEDIUM REMOVAL TEST

Sample No	WTH1901F	Temperature	19°C	Humidity	36%RH	Date	10/04/2019

Clause 4.4.2 Infill manual test

Craft knife used to cut vee notch in frame profile, 6mm flat blade screwdriver used in attempt to knock out bottom bead, glass breakage - test halted

Craft knife used to cut vee notch in side of frame profile on S/H sash, 6mm flat blade screwdriver used in attempt to knock out side bead, screwdriver punched through bead several times. - No entry gained

MANUAL CHECK TEST

Sample No	WTH1901F	Temperature	20°C	Humidity	50%RH	Date	18/04/2019

Clause 4.6 Manual check test (note tools used and time taken)

2 x Nail bars used to lever at mid point at mullion side of T/H sash - No entry gained
2 X Nail bars used to lever at mid point at hinge side of S/H sash - No entry gained
2 X Nail bars used to lever between centre and bottom lock points of S/H sash - No entry gained
2 X Nail bars used to lever at centre of bottom of S/H sash - No entry gained

IINFILL MEDIUM REMOVAL TEST

Sample No	WTH1901F	Temperature	20°C	Humidity	46%RH	Date	09/04/2019

Clause 4.4.3 Infill mechanical test

Each corner of side hung sash glass unit loaded to 2000N and held for 10 seconds in turn.

No entry gained

Each corner of top hung sash glass unit loaded to 2000N and held for 10 seconds in turn.

No entry gained

ADDITIONAL MECHANICAL LOADING TEST

Sample No		Temperature	°C	Humidity	%RH	Date	

Clause 4.7 Additional mechanical loading test

MANIPULATION TEST

Sample No	WTH1901F	Temperature	20°C	Humidity	44%RH	Date	09/04/2019

Clause 4.3 Manipulation test b)

Used 3mm flat blade screwdriver to partially undo screws securing bottom hinge protector to sash

No entry gained

MECHANICAL LOAD TEST

Clause 4.5 Mechanical Load test

Sample No	WTH1901F	Temperature	20°C	Humidity	44%RH	Date	09/04/2019

Load location	Parallel to plain load	Perpendicular to plain load	Observations / Assessment
1 Top hinge & hinge protector, S/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
1 Top hinge & hinge protector, S/H sash Horiz	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
2 Top opening corner & top lock point S/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
2 Top opening corner & top lock point S/H sash Horizontal + mullion pull	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
3 Centre lock point S/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Heldd for 10 seconds
3 Centre lock point S/H sash Horizontal + mullion pull	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
4 Bottom opening corner & bottom lock point S/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
4 Bottom opening corner & bottom lock point S/H sash Horizontal + mullion pull	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconda
5 Bottom hinge & hinge protector, S/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
5 Bottom hinge & hinge protector, S/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
6 L/H hinge & hinge protector T/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds

MECHANICAL LOAD TEST CONT.

Clause 4.5 Mechanical Load test

Sample No	WTH1901F	Temperature	20°C	Humidity	44%RH	Date	09/04/2019

Load location	Parallel to plain load	Perpendicular to plain load	Observations / Assessment
6 L/H hinge & hinge protector T/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
7 L/H opening corner & lock point T/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
7 L/H opening corner & lock point T/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
8 Centre lock point T/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
8 Centre lock point T/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
9 R/H opening corner & lock point T/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
9 R/H opening corner & lock point T/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
10 R/H hinge & hinge protector T/H sash Horizontal + mullion pull	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
10 R/H hinge & hinge protector T/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds
	1000 N (10 sec)	3000 N (10 sec)	
	1000 N (10 sec)	3000 N (10 sec)	

PICTURE OF TEST WINDOW

END OF REPORT