




**Test Report 8247857.**  
Smart Systems Limited  
incorporating Smart Extrusions

## Introduction.

This report has been prepared by Adam Pearce and relates to the activity detailed below:

Job/Registration Details	Client Details
<b>Job number:</b> 8247857 Job type: Testing Samples Submitted Start Date: 01/11/2014 Test type: Type Sample ID: 10152174 10155672 <b>Registration:</b> KM 530838 Scheme: PAS 23-1 and PAS 24-1 System Supplier Protocol: PP 519 Scheme Mgr: Lorraine Balch Quality system: ISO 9001:2008	Smart Systems Limited incorporating Smart Extrusions Arnolds Way Yatton BS49 4QN United Kingdom

The report has been approved for issue by Mark Manito – Team Manager

Approved For Issue	
	Issue Date: 28 September 2015

## Objectives.

Type test for product certification

## Product Scope.

Smart Visiglide Plus aluminium sliding patio doors

## Report Summary.

The samples were received on 26 November 2014 and the testing was started on 28 November 2014.

The samples submitted complied with the requirements of the test work conducted.

## Test Samples.

Sample Id	ER Number	Description
1	10152174	Aluminium sliding patio doors

## Description of Test Samples.

Sample Description
3 off sliding glaze in patio doors with one fixed pane and one sliding pane and standard threshold
1 off sliding glaze in patio doors with one fixed pane and two sliding panes and standard threshold

## Test Requirements.

PAS24/BS4873 Type test

Clause	Requirements
<b>As required</b>	<p><b>Test and Assessment</b></p> <p>Please see results table for testing and assessment of samples as detailed.</p> <p><i>See Table A - PAS24/BS4873 Type</i></p>

## Summary of Test Comments.

Clause	Comments
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## Glossary of Terms.

PASS: Complies. Tested by BSI engineers at BSI laboratories.

PASS1: Complies. Witnessed by BSI engineers in manufacturers laboratory.

PASS2: Complies. Tests carried out by third party lab; results accepted by BSI.

PASS\*: Report resulted in uncertainty and states that Compliance is more probable than non-compliance.

FAIL: Non compliance – Product does not meet the requirements of this clause.

FAIL\*: Report resulted in uncertainty and states that Non-compliance is more probable than compliance.

N/A: Not applicable to design under consideration.

N/T: Not tested due to similarity to previously tested item; reference earlier test report.

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## Table A - PAS24/BS4873 Type

### Product Description.

2 off sliding patio glaze in doors with one fixed pane and one sliding pane and standard threshold

(Sample ID No 10152174)

Date samples received: 26 November 2014

### Test Results.

1. Manipulation	Test samples met the requirements of the Specification in respect of B.4.3
2. Infill removal	Test samples met the requirements of the Specification in respect of B.4.4
3. Mechanical loading	Test samples met the requirements of the Specification in respect of B.4.5
4. Manual check test	Test samples met the requirements of the Specification in respect of B.4.6
5. Soft body impact	Test samples met the requirements of the Specification in respect of B.4.8
6. Hard body impact	Test samples met the requirements of the Specification in respect of B.4.9.2.2
7. Security hardware and cylinder test	Test samples met the requirements of the Specification in respect of Annex A
8. Letter plate	Not fitted

**B.2 SAMPLE SELECTION .**

The samples submitted for tests were selected using the criteria in B.2 of the Specification. Each sample was submitted for test mounted in a 75mm x 100mm timber subframe in accordance with the manufacturer's installation requirements.

**B.4 TEST METHODS**

The method of testing the samples followed the sequence detailed in B.4 of the Specification.

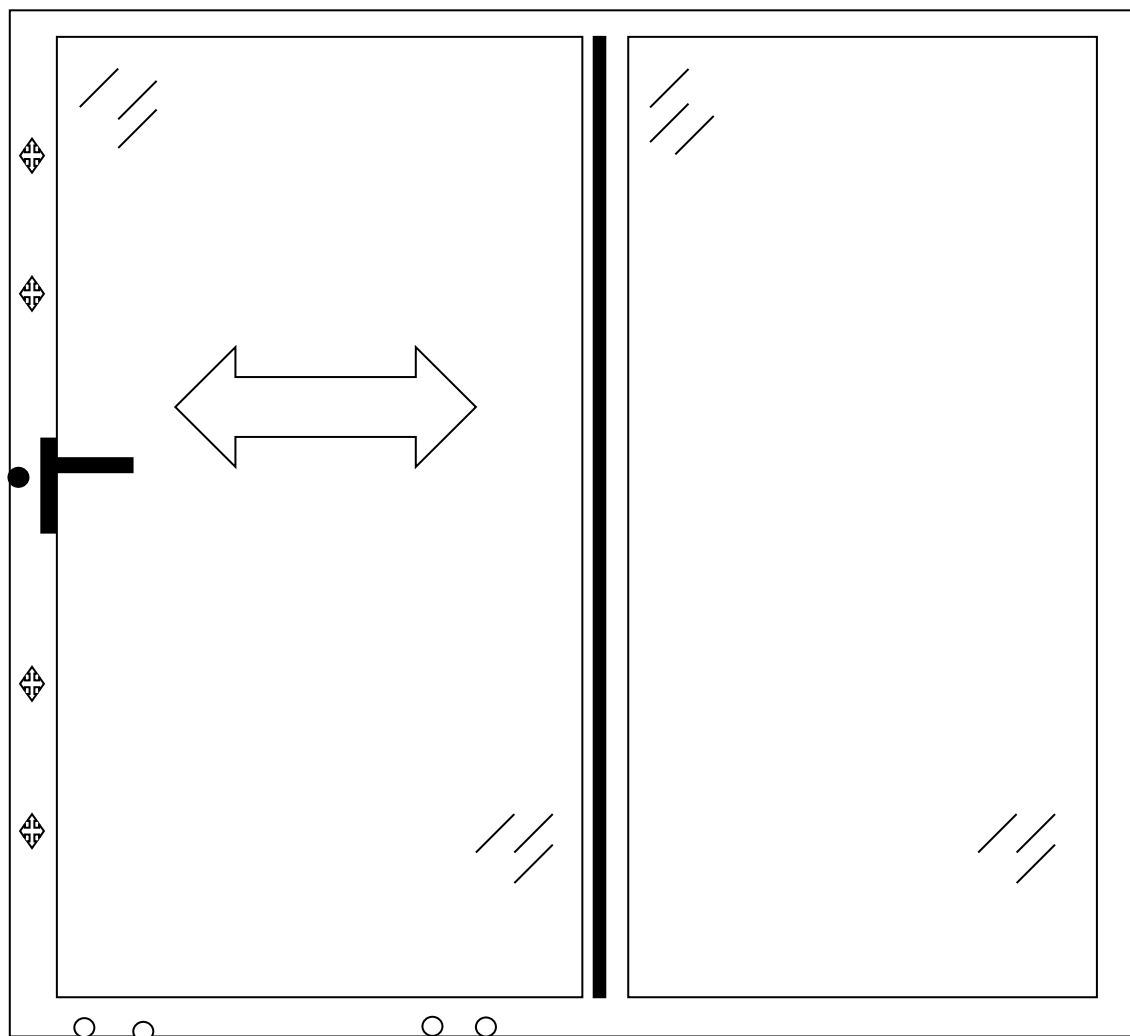
**B.3 REQUIREMENTS FOR TEST APPARATUS**






The test apparatus for the manual and mechanical tests is shown in figures B.2 to B.5.

Description of Samples. (samples 1, 2 and 4)

<b>Sample type -</b>	Sliding patio doors fully glazed with one fixed pane and one sliding pane and standard threshold		
<b>Material -</b>	Aluminium		
<b>Finish -</b>	Natural		
<b>Fittings -</b>	A five point Sobinco Multipoint (D KT) key locking hardware (one hook bolt and four mushroom bolts) cylinder, Sobinco handle, four rollers and one continuous hinge		
<b>Weathersealing -</b>	Brush		
<b>Glass -</b>	Double glazed with 6-16-6mm toughened glass sealed units		
<b>Panel -</b>	Not applicable		
<b>Glass retention system -</b>	Internal beads and gaskets		
<b>Sample dimensions -</b>	Overall -	Length: 2800mm	Height: 2400mm
	Active Leaf -	Length: 1400mm	Height: 2310mm
	Side Light -	Length: 1400mm	Height: 2310mm
<b>Date of test -</b>	23 April 2014		
<b>Laboratory temperature -</b>	22.6 °C		
<b>Laboratory humidity -</b>	49.6 %		

**ELEVATION DRAWING OF DOOR ASSEMBLY  
(indicating position of hardware)**



-  - hinge
-  - roller
-  - hook bolt
-  - handle
-  - Hook bolt



## Test Results.

### CLAUSE 7 PERFORMANCE REQUIREMENTS

### ASSESSMENT

#### B.4.3 Manipulation Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out in accordance with the given objective of this Annex using the procedure detailed in B.4.3.1 and the tools described in Group A and B where applicable.

The sample was closed and locked and the key removed.  
Although there is no overall time limit no one technique was used for more than 3 minutes.

No entry could be effected by any technique within 3 minutes Pass

#### B.4.4 Cutting and Infill medium removal test

##### B.4.4.2 Infill Manual Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out in accordance with the requirements of this Annex using the tools described tools in Group A and B where applicable.

No entry could be effected within 3 minutes Pass

##### B.4.4.3 Infill Mechanical Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out with a perpendicular to plane load of 2.0kN applied to each corner of the glazing and each corner of the boundaries of components in turn as specified.

No evidence of bead failure  
No entry could be effected Pass

##### B.4.4.4 Manual Cutting Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out in accordance with the requirements of this Clause using the tools described.

No entry could be effected Pass

## Test Results (Continued).

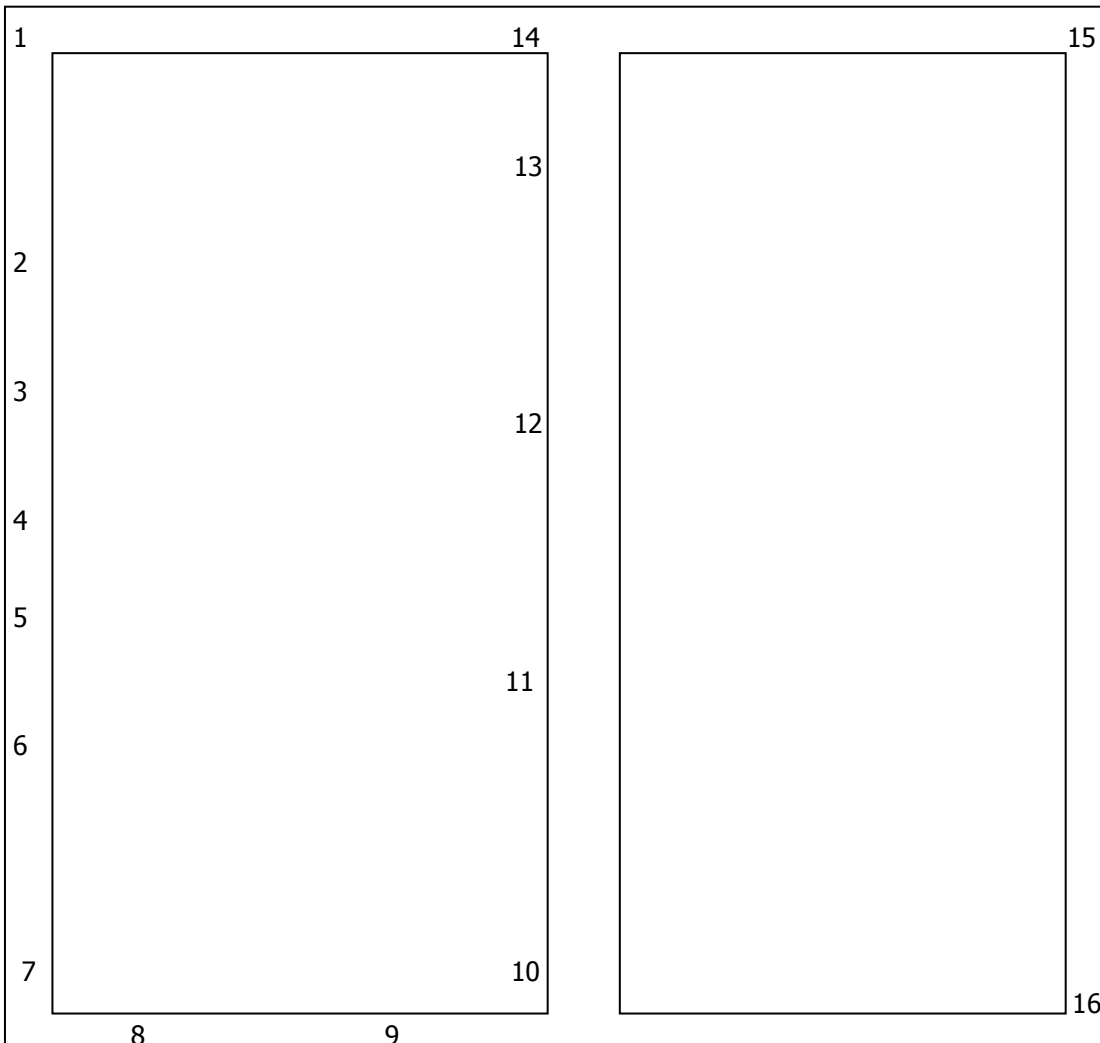
### PERFORMANCE REQUIREMENTS

#### B.4.5 Mechanical Loading Test

The sample was mounted, vertically and square, in the test rig.

The test was carried out in accordance with the procedures detailed in B.4.5, Using loading cases B.1 to B.6 and Figures B.12 for loading sequence and using the test apparatus detailed in Figures B.6 to B.9.

Diagram of points of application of loads



## Test Results.

### PERFORMANCE REQUIREMENTS

#### B.4.5 Mechanical Loading Test

##### B.4.5.2 Loading Procedures

##### Assessment

Point of application of load

##### First Sequence

1. Non meeting corner (upper left jamb)

Standard loading case used: 1

Load applied in plane: 4.5kN in direction of opening

Load applied perpendicular to plane: 1.5kN applied for 10 seconds

Load applied in plane: 1.5kN downwards towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

2. Mushroom bolt (upper left jamb)

Standard loading case used: 6

Load applied in plane: 1.5kN along edge in a direction to disengage the bolt

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 4.5kN in direction of opening

3. Mushroom bolt (upper left jamb)

Standard loading case used: 6

Load applied in plane: 1.5kN along edge in a direction to disengage the bolt

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 4.5kN in direction of opening

4. Hook bolt (centre left jamb)

Standard loading case used: 6

Load applied in plane: 1.5kN along edge in a direction to disengage the bolt

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 4.5kN in direction of opening

**EXAMINATION AND TEST (CONTINUED)****B.4.5 Mechanical Loading Test****B.4.5.2 Loading Procedures****Assessment**

Point of application of load

5. Mushroom bolt (lower left jamb)

Standard loading case used: 6

Load applied in plane: 1.5kN along edge in a direction to disengage the bolt

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 4.5kN in direction of opening

6. Mushroom bolt (lower left jamb)

Standard loading case used: 6

Load applied in plane: 1.5kN along edge in a direction to disengage the bolt

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 4.5kN in direction of opening

7. Non meeting corners (lower left jamb)

Standard loading case used: 1

Load applied in plane: 4.5kN in direction of opening

Load applied perpendicular to plane: 1.5kN applied for 10 seconds

Load applied in plane: 1.5kN upwards towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

8. Roller / Roller (centre left active leaf)

Standard loading case used: 8

Load applied in plane: 4.5kN centred over loading point and towards the opposite edge

Load applied perpendicular to plane: 1.5kN applied for 10 seconds

**EXAMINATION AND TEST (CONTINUED)****B.4.5 Mechanical Loading Test****B.4.5.2 Loading Procedures****Assessment**

Point of application of load

9. Roller / Roller (centre right active leaf)

Standard loading case used: 8

Load applied in plane: 4.5kN centred over loading point and towards the opposite edge

Load applied perpendicular to plane: 1.5kN applied for 10 seconds

10. Meeting corner (bottom right fixed)

Standard loading case used: 2

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

4.5kN at the mullion to oppose the above load

Load applied in plane: 1.5kN upwards towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

11. Continuous Interlock (lower false mullion)

Standard loading case used: 4

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

4.5kN at the mullion to oppose the above load

12. Continuous Interlock (upper false mullion)

Standard loading case used: 4

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

4.5kN at the mullion to oppose the above load

13. Meeting corner (upper false mullion)

Standard loading case used: 2

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

4.5kN at the mullion to oppose the above load

Load applied in plane: 1.5kN upwards towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

**EXAMINATION AND TEST (CONTINUED)****B.4.5 Mechanical Loading Test****B.4.5.2 Loading Procedures****Assessment**

Point of application of load

## 14. Corner fixed (upper right fixed)

Standard loading case used: 9

Load applied in plane: 1.5kN centred over loading point and towards opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

## 15. Corner fixed (centre fixed)

Standard loading case used: 9

Load applied in plane: 1.5kN centred over loading point and towards opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

## 16. Corner fixed (lower right fixed)

Standard loading case used: 9

Load applied in plane: 1.5kN centred over loading point and towards opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

No entry effected

Pass

## Test Results (Continued).

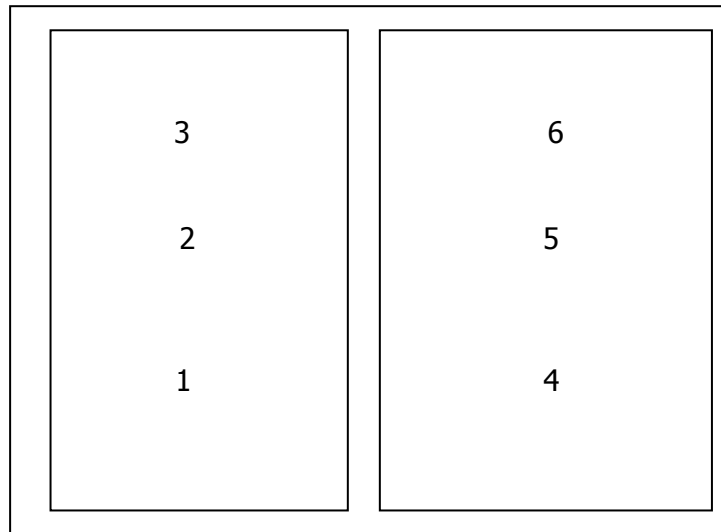
### B.4.8 Soft Body Impact Test

### ASSESSMENT

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out in accordance with the requirements, objectives and procedures detailed in B.4.8.1 using the impact point and procedure described in B.4.8.2 and B.4.8.3 and Figure B.10

Diagram of points of application of loads



## Test Results (Continued).

### B.4.8 Soft Body Impact Test

### ASSESSMENT

Impact point	Position from floor level	Effect
1	0.80m Infill	None
2	1.25m Infill	None
3	1.7m Infill	None
4	0.80m Infill Fixed	None
5	1.25m Infill Fixed	None
6	1.7m Infill Fixed	None

No entry effected

Pass



## Test Results (Continued).

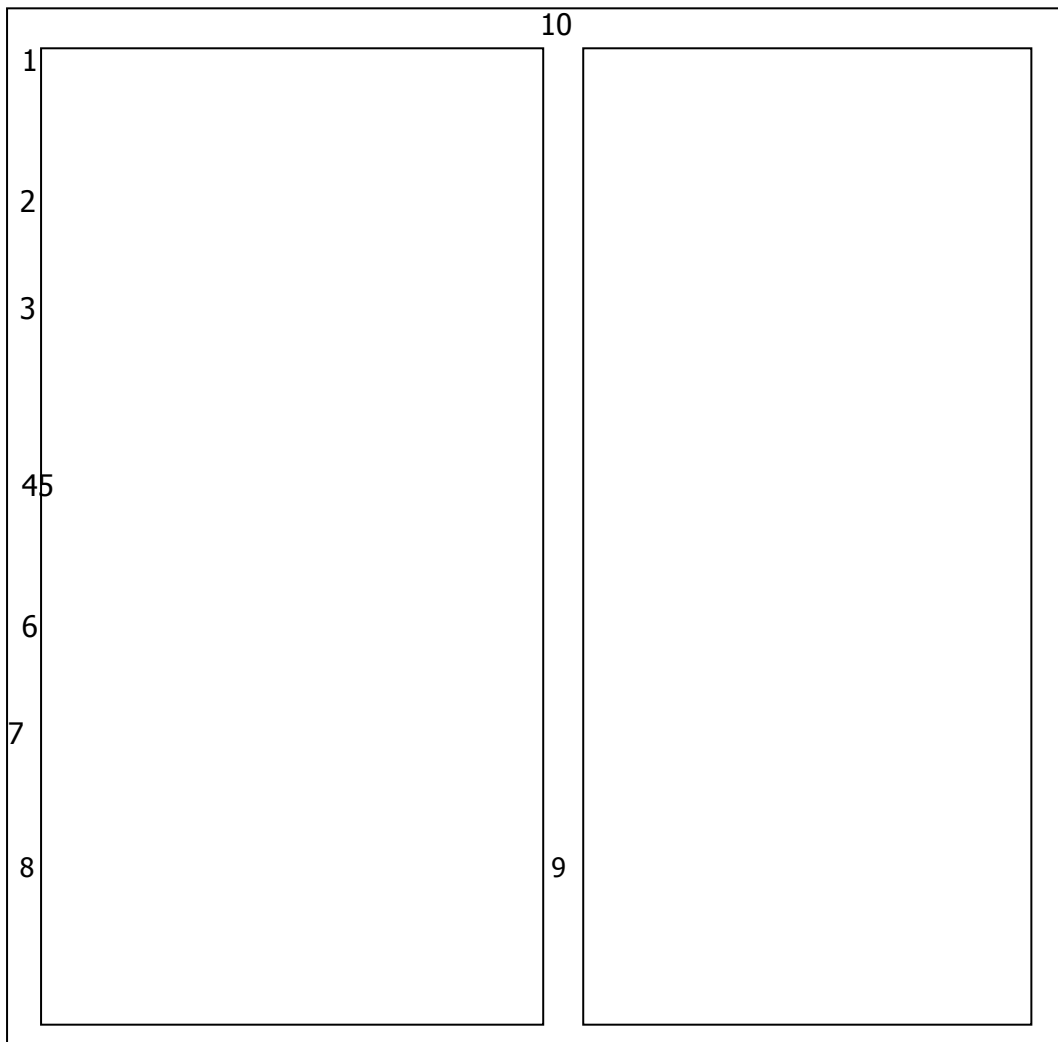
### PERFORMANCE REQUIREMENTS

#### B.4.9 Hard body impact test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out in accordance with the requirements, objectives and procedures detailed in B.4.9.1, B.4.9.2.1, B.4.9.2.2, B.4.9.2.3 using procedure B.4.9.3, using the test apparatus detailed in B.11 using the impact sequence in figure B.14.

Diagram of points of application of loads



## Test Results (Continued).

### ASSESSMENT

#### PERFORMANCE REQUIREMENTS

##### B.4.9 Hard body impact test (continued)

Impact point	Position	Effect
1	Corner	None
2	Mushroom Bolt	None
3	Mushroom Bolt	
4	Hook bolt	None
5	Cylinder	None
6	Hook bolt	None
7	Mushroom bolt	None
8	Mushroom bolt	None
9	Corner	None
10	Corner	None

No entry effected

Pass

## Test Results (Continued).

### PERFORMANCE REQUIREMENTS

#### Annex A Security Hardware and Cylinder Test and Assessment

##### Annex A.3.2 (Part 1)

The sample was mounted, vertically and square, in the test rig as described in Clause 3.1.

The test was carried out in accordance with the given objective of this Annex using the procedure detailed in Annex A.3.1 and the tools described in A.2.

The sample was closed and locked and the key removed.

The total attack time was 3 minutes and the total rest time was 7 minutes

No entry could be effected within 3 minutes Pass

##### Annex A.3.2 (Part 2)

The sample was mounted, vertically and square, in the test rig as described in Clause 3.1.

The test was carried out in accordance with the given objective of this Annex using the procedure detailed in Annex A.3.1 and the tools described in A.2

The sample was closed and locked and the key removed.

The total attack time was 3 minutes and the total rest time was 7 minutes

No entry could be effected within 3 minutes Pass

Photograph of Sample.



## Product Description.

1 off sliding patio door with one fixed pane and two sliding panes fully glazed in door assembly with standard threshold

1 off sliding patio door with one fixed pane and one sliding pane fully glazed in door assembly with standard threshold

(Sample ID No 10152417)

Date samples received: 26 November 2014

## SUMMARY OF RESULTS.

- |                     |  |
|---------------------|--|
| 1. Air permeability | Test sample 3 met the requirements of the Specification, in respect of Clause 12, for Test Pressure Class 3.     |
| 2. Watertightness   | Test sample 3 met the requirements of the Specification, in respect of Clause 12, for Test Pressure Class 3A.    |
| 3. Wind resistance  | Test sample 3 met the requirements of the Specification, in respect of Clause 12, for Exposure Category Class A3 |

## Classification for Wind Resistance.

Test sample 3	Exposure Category 1200Pa
---------------	--------------------------

- |                         |  |
|-------------------------|--|
| 4. Operational Strength | The test samples met the requirements of the Specification in respect of BS 6375-2 |
|-------------------------|--|

## Classification for Operational strength.

Operating forces	Class 1
Vertical load	N/A
Resistance to Static torsion	N/A
Soft and Heavy body Impact Load bearing	Class 2
Hard body impact	Class 2
Load bearing capacity of safety devices	N/A
Closure against obstruction	Pass
Repeated opening and closing (sample 4)	50000

- |                   |   |
|-------------------|---|
| 5. Basic security | The test samples met the requirements of BS6375 |
|-------------------|---|

**SAMPLE SELECTION .**

The samples submitted for tests were selected using the PCP Scheme Document Specification. Each sample was submitted for test mounted in a 75mm x 100mm timber subframe in accordance with the manufacturer's installation requirements.

**CLAUSE 5 SEQUENCE OF TESTS**

The sequence of testing the samples followed that detailed in Clause 5 of BS6375-1:2009.

**CLAUSE 5 PERFORMANCE REQUIREMENTS**

The performance of each sample was assessed against the requirements detailed in Table 1 Exposure categories and classifications

## METHODS OF TEST.

### 1. **Operating Forces**

The operating forces acting on the sample were determined by the methods given in standard BS EN 12046 – 2.

### 2. **Air Permeability**

The air permeability of the sample was determined by the method given in BS 6375-1:2009.

### 3. **Watertightness**

The watertightness of the sample was determined by the method given in BS 6375-1:2009.

### 4. **Wind Resistance**

The wind resistance of the samples was determined by the methods (P1 and P2) given in BS 6375-1:2009.

### 5. **Repeat Tests**

After testing for resistance to wind loading (P1 and P2) the air permeability test was repeated.

### 6. **Wind Resistance**

The wind resistance of the samples was determined by the method (P3) given in BS 6375-1:2009.

### 7. **Soft and heavy body impact**

The resistance to soft and heavy body impact was carried out using the method given in standard BS EN 949.

### 8. **Hard body impact**

The resistance to hard body impact was carried out using the method given in standard BS EN 950.

### 9. **Closure against obstruction**

The Closure against obstruction was carried out using the method given in BS 6375-3

### 10. **Basic security**

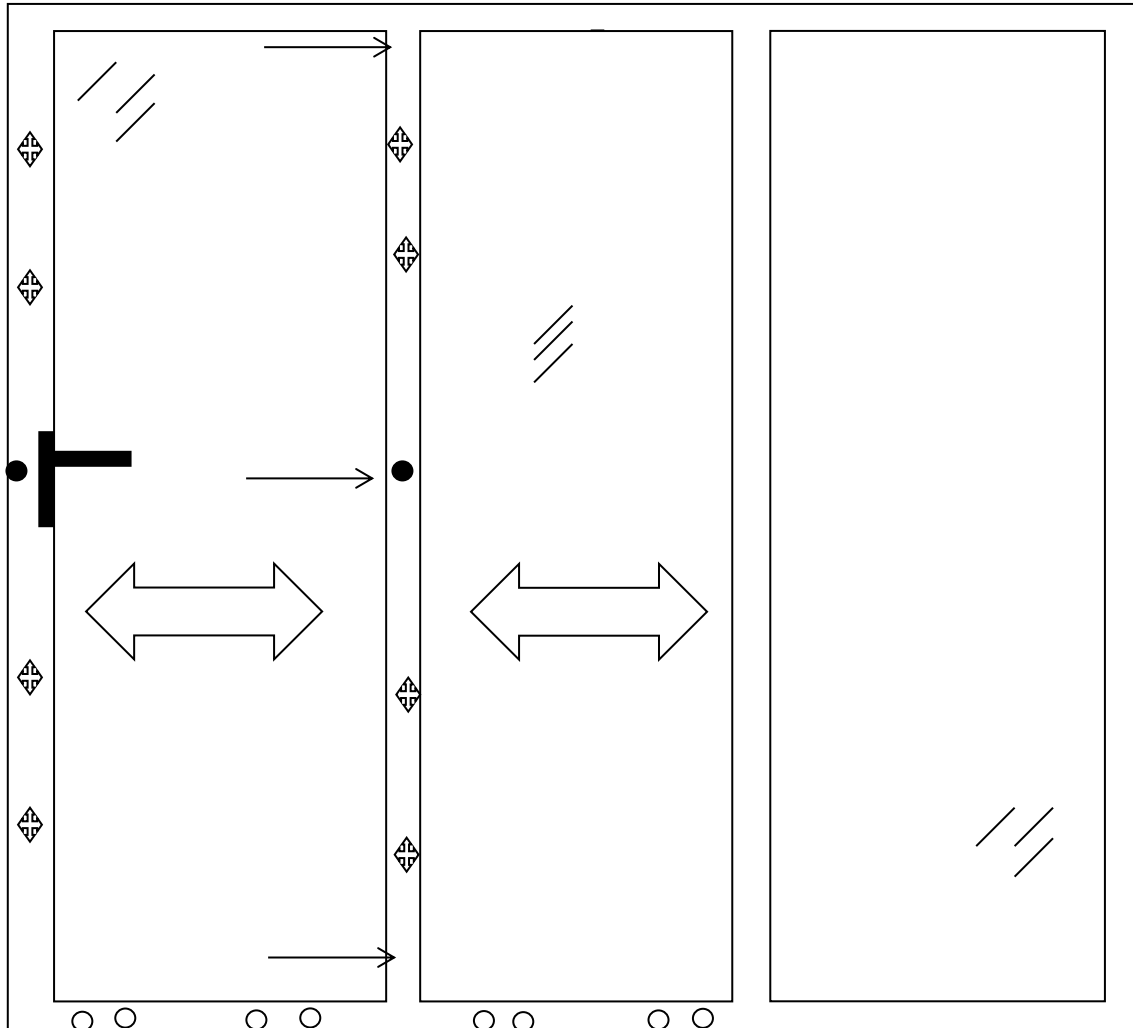
The basic security test was carried out using the method given in standard BS 6375:3.

## Description of Sample. (sample 3)






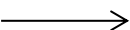
<b>Sample type -</b>	Sliding patio door fully glazed in with one fixed pane and two sliding pane and standard threshold		
<b>Material -</b>	Aluminium		
<b>Finish -</b>	Natural		
<b>Fittings -</b>	A ten point Sobinco Multipoint key locking hardware (two hook bolts and eight mushroom bolts) two cylinders, Sobinco handle, eight rollers and two continuous hinge		
<b>Weathersealing -</b>	Brush		
<b>Glass -</b>	Double glazed with 6-16-6 mm toughened glass sealed units		
<b>Panel -</b>	Not applicable		
<b>Glass retention system -</b>	Internal beads and gaskets		
<b>Sample dimensions -</b>	Overall -	Length: 3600mm	Height: 2400mm
	Active Leaf -	Length: 1200mm	Height: 2295mm
	Side Light -	Length: 1200mm	Height: 2295mm
<b>Date of test -</b>	28 November 2014		
<b>Laboratory temperature -</b>	21.3 °C		
<b>Laboratory humidity -</b>	53.4 %		



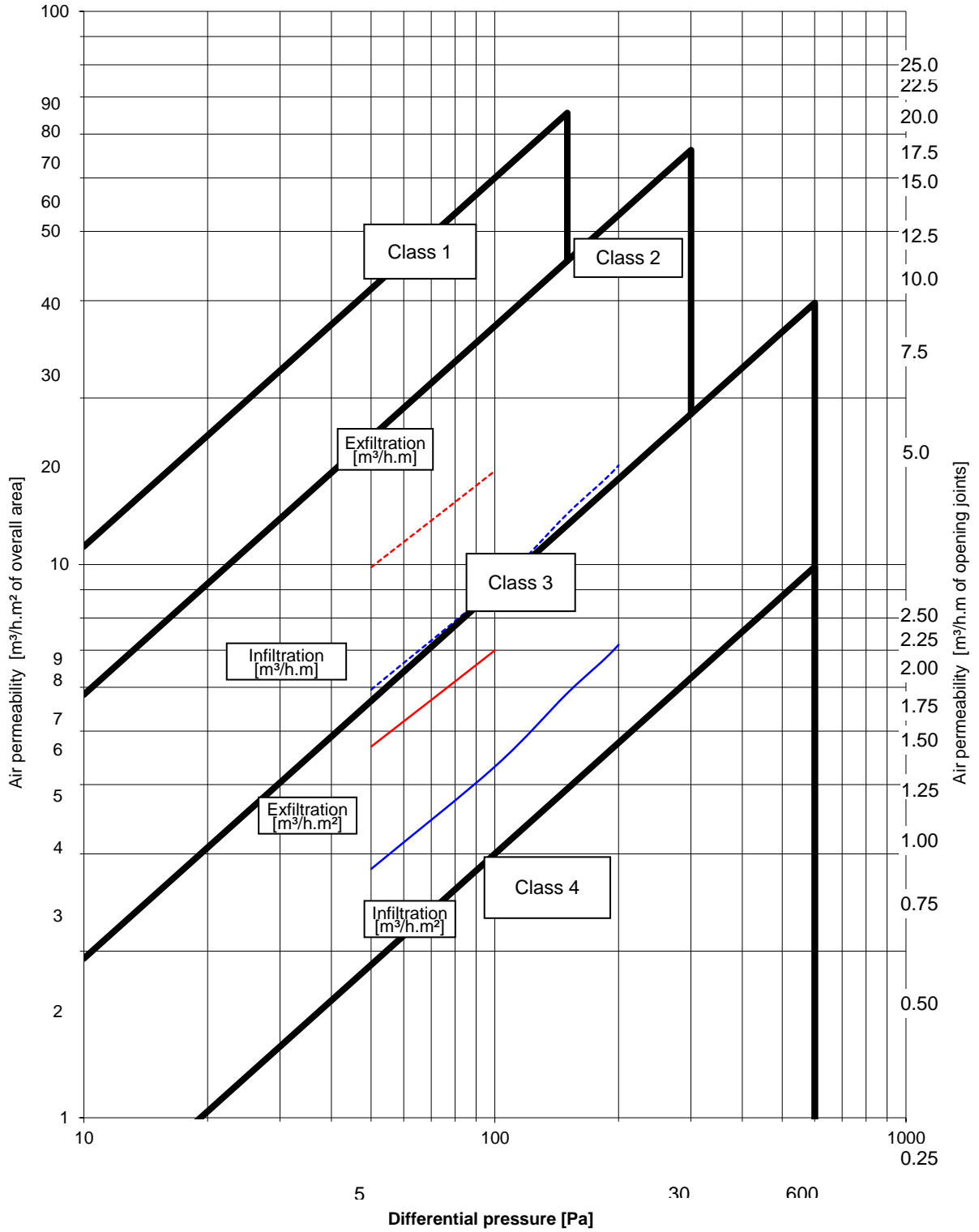
**ELEVATION DRAWING OF DOOR ASSEMBLY  
(indicating position of hardware)**



water leakage

-  - hinge
-  - roller
-  - hook bolt
-  - handle
-  - Hook bolt
-  - Transducer placement

GRAPH OF AIR PERMEABILITY BEFORE GUSTING



**AIR PERMEABILITY TEST RESULTS - BS 6375-1:2009 Clause 6 / BS EN 1026:2000**

**Select a clause**

Three positive pressure pulses of 660Pa were applied prior to testing

**Table 4**

Air Pressure [Pa]	Average rate of air leakage [m <sup>3</sup> /h]	Average rate of air leakage per meter length of opening joint [m <sup>3</sup> /h.m]	Average rate of air leakage relative to area of sample [m <sup>3</sup> /h.m <sup>2</sup> ]
50	32.4	1.98	3.75
100	48.8	2.98	5.65
150	63.8	3.90	7.39
200	-	-	-
250	-	-	-
300	-	-	-
450	-	-	-
600	-	-	-

Note: The figures in the table above give the leakage as an average of the leakage at positive pressure and the leakage at negative pressure

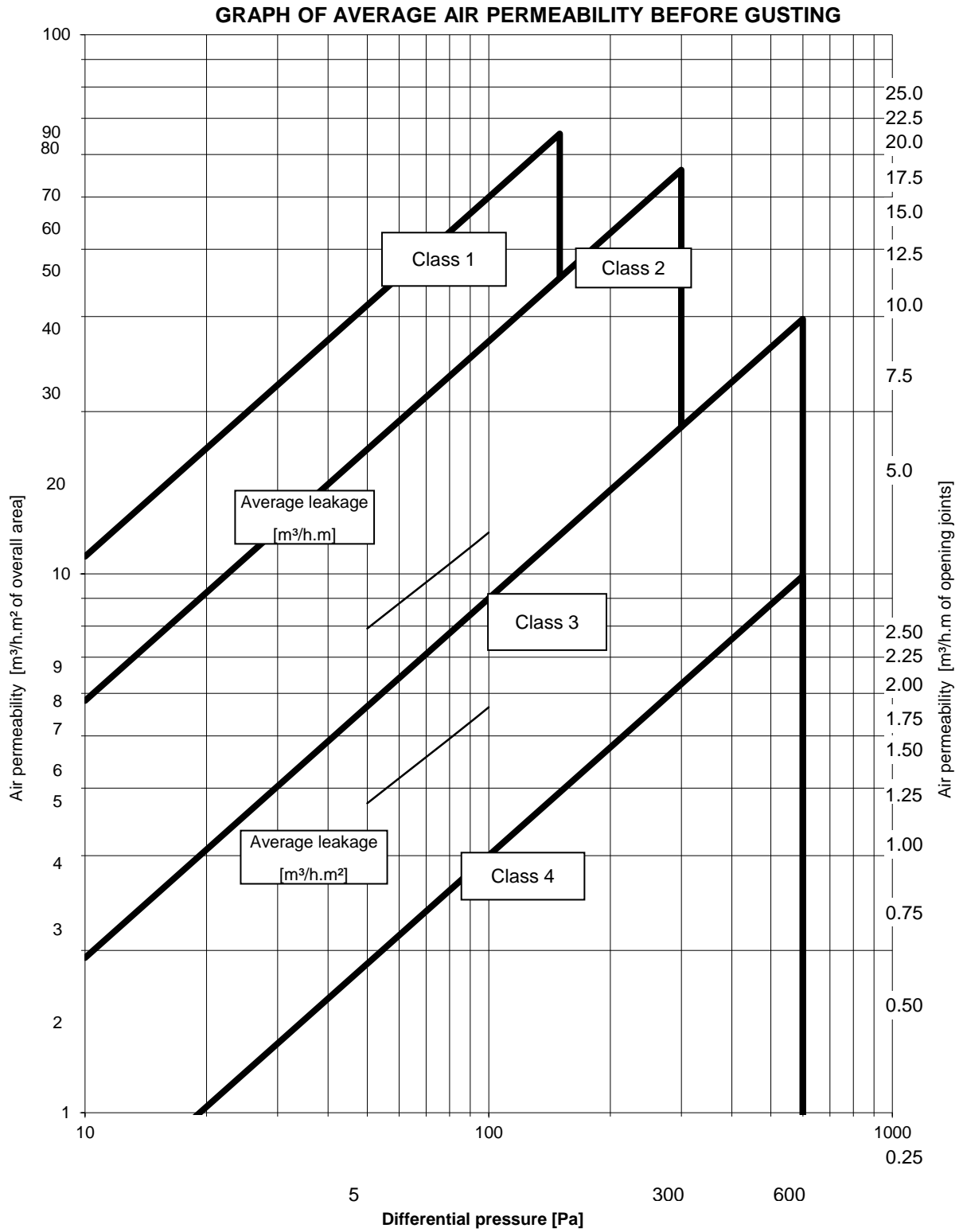
Total opening perimeter = 16.38m

Overall area = 8.64m<sup>2</sup>

BS 6375-1:2009 Clause 6.2 - Joint class = 2

BS 6375-1:2009 Clause 6.2 - Area class = 3

BS 6375-1:2009 Clause 6.2 - Overall class = 3



## WATERTIGHTNESS TEST RESULTS.

### BS EN 1027:2000 Clause 7 Watertightness before resistance to wind loads

TABLE 2 - Spraying method 1A

Air pressure (Pa)	Point at which water leakage occurred
150	water ran out and over threshold from the threshold opening joint

### WIND LOAD RESISTANCE TEST RESULTS - BS EN 12211:2000

#### Clause 8 Resistance to wind load

##### P1 DEFLECTION TEST

Three positive pressure pulses at 1320Pa were applied

No visible failures or functional defects to the test sample were observed after wind loads applied at a positive air pressure of 1200Pa.

Actual deflection – 4.80mm (maximum deflection allowed 14.66mm)

Deflection/span ratio 1/458 (maximum ratio allowed 1/150)

Three negative pressure pulses at 1320Pa were applied

No visible failures or functional defects to the test sample were observed after wind loads applied at a negative air pressure of 1200Pa.

Actual deflection – 6.11mm (maximum deflection allowed 14.66mm)

Deflection/span ratio 1/360 (maximum ratio allowed 1/150)

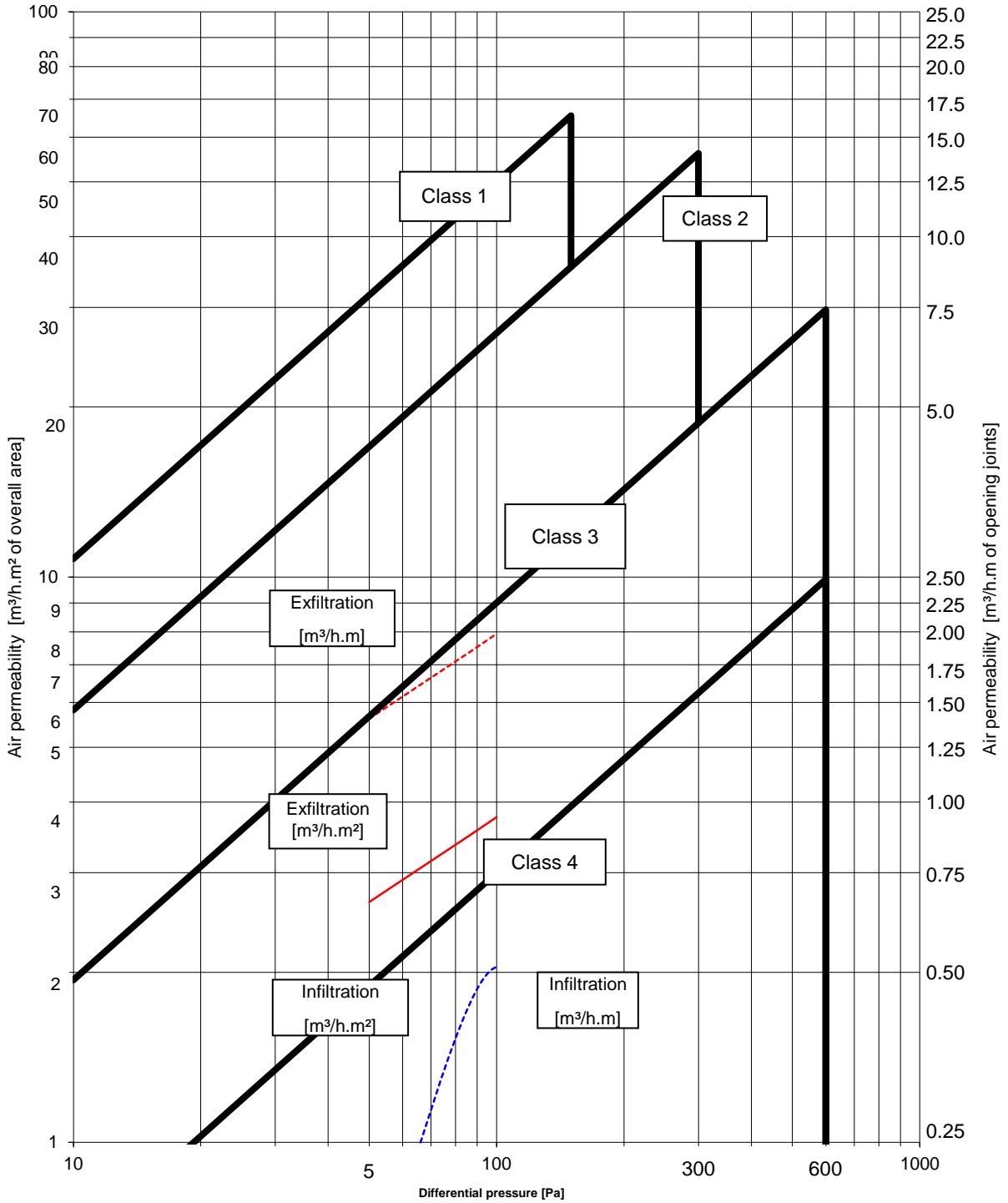
##### P2 REPEATED PRESSURE TEST

No visible failures or functional defects to the test sample were observed after 50 cycles of repeated wind loads applied at a positive air pressure of 600Pa.

No visible failures or functional defects to the test sample were observed after 50 cycles of repeated wind loads applied at a negative air pressure of 600Pa.

In accordance with BS 6375-1:2009 Clause 6.5, as the classification after the resistance to wind load tests is the same as the classification before the resistance to wind load tests, the resulting classification for the sample is Class 3. (see following Table).

GRAPH OF AIR PERMEABILITY AFTER GUSTING



**AIR PERMEABILITY TEST RESULTS - BS 6375-1:2009 Clause 6 / BS EN 1026:2000**

**Clause 6 After resistance to wind tests**

Three positive pressure pulses of 660Pa were applied prior to testing

**Table 4**

Air Pressure [Pa]	Average rate of air leakage [m <sup>3</sup> /h]	Average rate of air leakage per meter length of opening joint [m <sup>3</sup> /h.m]	Average rate of air leakage relative to area of sample [m <sup>3</sup> /h.m <sup>2</sup> ]
50	12.6	0.77	1.46
100	20.4	1.25	2.36
150	21.5	1.31	2.49
200	-	-	-
250	-	-	-
300	-	-	-
450	-	-	-
600	-	-	-

Note: The figures in the table above give the leakage as an average of the leakage at positive pressure and the leakage at negative pressure

Total opening perimeter = 16.38m

Overall area = 8.64m<sup>2</sup>

BS 6375-1:2009 Clause 6.5 - Joint class = 3

BS 6375-1:2009 Clause 6.5 - Area class = 4

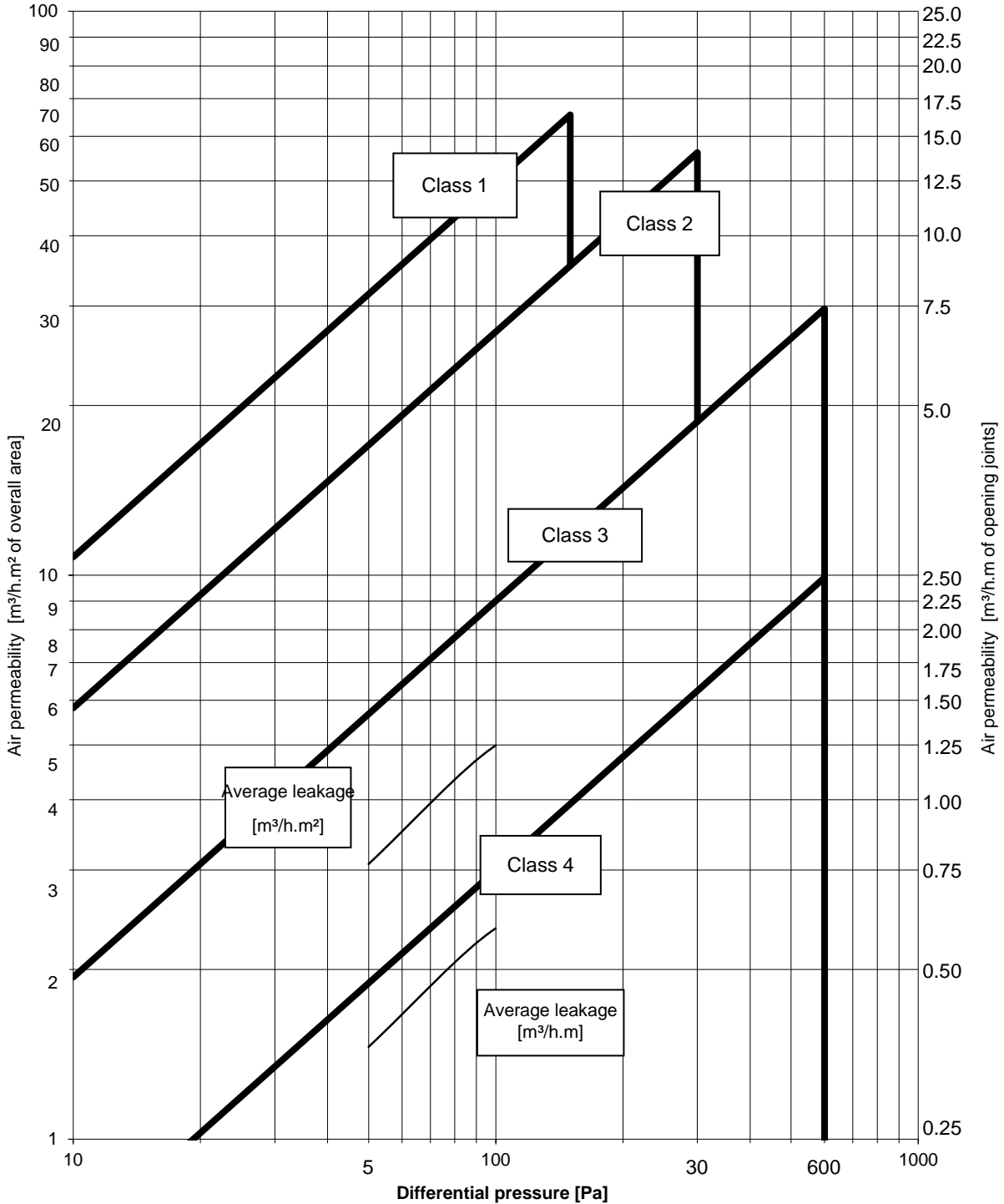
BS 6375-1:2009 Clause 6.5 - Overall class = 4

In accordance with BS 6375-1:2009 Clause 6.5, although the classification after the resistance to wind load tests is greater than the classification before the resistance to wind load tests, the resulting classification for the sample is Class 3.





GRAPH OF AVERAGE AIR PERMEABILITY AFTER GUSTING



## WIND LOAD RESISTANCE TEST RESULTS - BS EN 12211:2000.

### **P3 SAFETY TEST**

No parts of the test sample became detached and the test sample remained closed after a wind load safety test applied at a positive air pressure of 1800Pa.

No parts of the test sample became detached and the test sample remained closed after a wind load safety test applied at a negative air pressure of 1800Pa

## BS 6375-2:2009.

### Clause 6 Performance characteristics and requirements for pedestrian doorsets

### Assessment

#### Clause 6.2 Operating Forces: EN12046-2 and EN12217

The sample was tested three times, closing the leaf, handle, locking the key, unlocking the key, handle opening and maintaining the leaf to stay open, and highest of the three results were then recorded.

Closing leaf force – 64.15N (maximum 75N)	Pass
Handle closing – 22.25N (maximum 100N)	Pass
Key force to lock – 1.00N (maximum 20N)	Pass
Key force to unlock – 0.80N (maximum 20N)	Pass
Handle opening – 21.10N (maximum 100N)	Pass
Force to maintain opening – 57.60N (maximum 75N)	Pass

### Clause 6.3.3 Soft and Heavy body Impact .

The door was closed to its normal operating mode and the sample was marked at the centre of the door leaf.

The deviation across the width of the door was measured at the impact point.

A 30±0.6Kg leather impactor was raised to the required drop height and impacted to the exterior face, then the deviation was measured again

For the door to achieve the required class it shall not exceed 2mm Residual measurement across face of impacted side.

The sample was impacted in the centre of the active leaf and from the outside

Residual measurement – 0mm	Pass
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**BS 6375-2:2009.****Clause 6  
Performance characteristics and requirements  
for pedestrian doorsets****Assessment****Clause 6.3.4 Hard body Impact.**

The door leaf was mounted horizontally with rigid supports under the long edges of the leaf and pattern 2 was selected.

Glazed impact points were omitted, and the exterior side was impacted.

If permanent damage is left after impact measurements were taken after 30 minutes.

Mean of the Diameter – 4.00mm

Mean of the depth – 0.10m

The mean to qualify for a class shall not exceed 20mm, and the mean for the depth shall not exceed 1.0mm

Pass

**Clause 6.4 Load bearing capacity of safety devices.**

Not assessed due to no safety device being fitted

**Closure against obstruction.**

The objective of this test is to determine the resistance of a doorset to closure of the door leaf against small objects such as small toys, which may be accidentally trapped between the frame and leaf.

A 50 x 50 x 10mm aluminium block was placed in the gap between the leaf and the bottom of the hinge side jamb.

A 200N force was applied to the lock side of the leaf and held for 15 ±5 seconds

The leaf was then opened and closed 5 times and the operating forces were taken

Pass

**BS 6375-2:2009.****Clause 6  
Performance characteristics and requirements  
for pedestrian doorsets****Assessment****Clause 6.2 Operating Forces: EN12046-2 and EN12217**

The sample was tested three times, closing the leaf, handle, locking the key, unlocking the key, handle opening and maintaining the leaf to stay open, and highest of the three results were then recorded.

Closing leaf force – 64.20N (maximum 75N)	Pass
Handle closing – 22.55N (maximum 100N)	Pass
Key force to lock – 1.00N (maximum 20N)	Pass
Key force to unlock – 0.80N (maximum 20N)	Pass
Handle opening – 21.20N (maximum 100N)	Pass
Force to maintain opening – 57.95N (maximum 75N)	Pass

Photograph of Sample.



## BS 6375-2:2009. (Sample 4)

### Clause 6 Performance characteristics and requirements for pedestrian doorsets

### Assessment

#### Clause 6.5 Repeated opening and closing

The sample was opened and closed 5 times before testing started  
A procedure was followed

Key rotation of key to unlock: 360 degrees

#### Clause 6.2 Operating Forces: EN12046-2 and EN12217 (pre test operation)

The sample was tested three times, closing the leaf, handle, locking the key, unlocking the key, handle opening and maintaining the leaf to stay open, and average of the three results were then recorded.

#### Leaf tested for 50000 cycles

Closing leaf force – 87.10N (maximum 75N)	Pass
Handle closing – 66.65N (maximum 100N)	Pass
Key force to lock – 0.20N (maximum 20N)	Pass
Key force to unlock – 0.40N (maximum 20N)	Pass
Handle opening – 77.75N (maximum 100N)	Pass
Force to maintain opening – 90.15N (maximum 75N)	Pass

At 25% of the complete cycles the Operating forces were taken again

Closing leaf force – 87.00N (maximum 75N)	Pass
Handle closing – 66.60.N (maximum 100N)	Pass
Key force to lock – 0.20N (maximum 20N)	Pass
Key force to unlock – 0.40N (maximum 20N)	Pass
Handle opening – 78.20N (maximum 100N)	Pass
Force to maintain opening – 90.50N (maximum 75N)	Pass

Before the testing was restarted the sample was lubricated and no visible movement from the datum points were detected

## BS 6375-2:2009.

### Clause 6 Performance characteristics and requirements for pedestrian doorsets

### Assessment

#### Clause 6.5 Repeated opening and closing

At 50% of the complete cycles the Operating forces were taken again

Closing leaf force – 87.35N (maximum 75N)	Pass
Handle closing – 66.95N (maximum 100N)	Pass
Key force to lock – 0.20N (maximum 20N)	Pass
Key force to unlock – 0.40N (maximum 20N)	Pass
Handle opening – 78.80N (maximum 100N)	Pass
Force to maintain opening – 91.10N (maximum 75N)	Pass

Before the testing was restarted the sample was checked and no visible movement from the datum points were detected

At 75% of the complete cycles the Operating forces were taken again

Closing leaf force – 87.65N (maximum 75N)	Pass
Handle closing – 66.80N (maximum 100N)	Pass
Key force to lock – 0.20N (maximum 20N)	Pass
Key force to unlock – 0.40N (maximum 20N)	Pass
Handle opening – 77.75N (maximum 100N)	Pass
Force to maintain opening – 90.60N (maximum 75N)	Pass



**BS 6375-2:2009.****Clause 6 Performance characteristics and requirements for pedestrian doorsets****Assessment****Clause 6.5 Repeated opening and closing**

Closing leaf force – 86.55N (maximum 75N)	Pass
Handle closing – 66.90N (maximum 100N)	Pass
Key force to lock – 0.20N (maximum 20N)	Pass
Key force to unlock – 0.40N (maximum 20N)	Pass
Handle opening – 78.40N (maximum 100N)	Pass
Force to maintain opening – 90.55N (maximum 75N)	Pass

At 100% of the complete cycles the Operating forces were taken again

The sample met the requirements of the standard and remained within the forces for 50000cycles

**Basic security (Annex A) .****BS 6375: Part 3: 2009 - Performance of windows**

The objective of this test is to establish from if from the outside entry can be gained by defeating the glazing or locking system.

The force used did not result in permanent set or plastic deformation of any tool.

Damaged tools shall be replaced and the test did not exceed the maximum 3 minute time period.

The screwdriver was used to no effect

No entry could be effected Pass

**\*\*End of report\*\***