Element Materials Technology
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BS 6375-2&3:2009

Test of: Inward-Opening Single Timber Doorset

Performance of windows & doors - Part 2: Operation & strength & Part 3: Additional performance characteristics

A Report To:
Selectron
Halkal-¦ Merkez Mah,Sengul Sok.No:6,Istanbul,Turkey,34303

Document Reference:
WIL 414071

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TEST CONCLUSIONS

Samples of:

Manufacturer	Selectron
Product	Doorset
Model	Inward-Opening Single Timber Doorset

have been tested in accordance with: BS6375-2:2009 & BS6375-3:2009 Annex A&C.
By Element Materials Technology, a UKAS accredited Testing Laboratory (No. 0621)

At Unit 3 Wednesbury One, Black Country New Road, Wednesbury, WS10 7NZ.
Results and comments as detailed below:

BS6375-2 Clause	Description	Compliance
6.1	**UK Category of Duty - Medium**	**NO**
6.2	Operating forces – Class 1	YES
6.3	Mechanical strength – Class 2	YES
6.3.1	Vertical load – Class 2	YES
6.3.2	Static torsion – Class 2	YES
6.3.3	Soft and heavy body impact – Class 2	YES
6.3.4	Hard body impact – Class 2	YES
6.4	Load bearing capacity of safety devices – 350N	N/A
6.5	Resistance to repeated opening and closing – Class 4	N/T

BS6375-3 Clause	Description	Compliance
Annex A	**Basic security**	**YES**
Annex C	**Closure against obstruction**	**YES**

No inferences can be made regarding performance against other requirements of this standard

Tests marked " N/A" are not applicable to the sample under test.
Tests marked "N/T" were not applied to the sample under test

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AUTHORISATION

Tests performed by: Josh Ratcliffe, Test Engineer

Report issued by: Chris Bryan, Senior Test Engineer

Signed 

Date 20th August 2019

For and on behalf of Element Materials Technology

Report authorised by: Mark West, Door & Window Laboratory Manager

Signed 

Date 20th August 2019

For and on behalf of Element Materials Technology

Report issued: 20 August 2019

UKAS TESTING
0621

NOTE.
Tests marked "Not UKAS Accredited" are not covered by the Laboratory UKAS accreditation schedule.

Tests marked NT were not tested
Tests marked NA are not applicable to the product on test.

The laboratory has tested the product supplied by the client as sampled in accordance with their own requirements

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TEST DETAILS

CLIENT DETAILS

Company name	Selectron
Address	Halkal-¦ Merkez Mah Sengul Sok.No:6 Istanbul Turkey 34303
Contact	Huseyin Caliskan

ORDER DETAILS

Order number	SLN190502
Dated	

SAMPLE DETAILS

Outer frame	1140 x 2390 x 80mm
Opening leaves	1050 x 2380 x 70mm
Configuration	Single doorset open-in
Material	Timber
Details of Hardware	
Hinges	3No. Simonswerk BAKA 3D Hinge 4030 3D FD
Hinge protection	2No. Maco Dog Bolts 97528 & 94089
Lock	Maco Multi-Point Lock Door lock Z-TS 238354
Cylinder	Titon 3* Security Cylinder Asterion Three Star TN62 series
Handles	Pull handle LAZ 11 RY

TEST DETAILS

Test specification	BS 6375-2:2009 & BS 6375-3 :2009
Full test	No
Test to clauses	No durability testing
Test methods	BS EN 12046-2:2000 operating forces BS EN 947:1999 vertical load BS EN 948:1999 static torsion BS EN 949:1999 soft body impact BS EN 950:1999 hard body impact BS EN 948:1999 strength of safety devices BS EN 1191:2012 Annex H repeated opening & closing BS 6375-3:2009 Annex A basic security BS 6375-3:2009 Annex C closure against obstruction
Sample received	20/05/2019
Test started	20/05/2019
Test completed	20/05/2019
Special Test requirements	
Other reports to be used in conjunction with this report	

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TEST PROCEDURE

Introduction	This test report should be read in conjunction with the Standard BS 6375-2:2009 Performance of windows and doors – Part 2: Classification for operation and strength characteristics and guidance on selection & specification and Part 3: Classification for additional performance characteristics and guidance on seletion and specification. The specimens were judged on their ability to comply with the performance criteria as required in BS 6375-2:2009 and BS6375-3:2009, with test methods BS EN 12046-2:2000, BS EN 947:1999, BS EN 948:1999, BS EN 949:1999, BS EN 950:1999, BS EN 1191:2012 Annex H and BS6375-3:2009 Annex A&C. classified in accordance with BS 6375-2:2009, BS EN 12217:2015, BS EN 1192:2000 & BS EN 12400:2002.
Instruction To Test	Initial requirement was for a UK category of use of medium duty as defined in BS6375-2, requiring a performance of Class 1 for operating forces, Class 2 for mechanical strength, a threshold value of 350N for load-bearing capacity of safety devices, and Class 5 for repeated opening and closing.
Test Specimen Construction	A description of the test construction is given in the Schedule of Components. The description is based on a detailed survey of the specimens and information supplied by the sponsor of the test.
Installation	The doorset was supplied mounted within a timber sub-frame of nominal section 75 x 100mm fitted flush with the exterior face, in accordance with the clients fitting instructions. Mr Huseyin Caliskan, a representative of Selectron witnessed the test.
Sampling	The samples were not independently witnessed or selected and were provided direct from the test sponsor.
Test Climate	The sample was conditioned in the laboratory in the range 15-30 °C and 25-75% humidity. The temperature and humidity in the lab was maintained in the range 19.4-25.1°C and 28.2-57.6% humidity for the duration of the test.

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INITIAL OBSERVATIONS

The internal face of the sample

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Sample Central Keep

Sample Hook Bolt Keep

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Sample Cylinder

Sample Latch

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Sample Dead Bolt

Sample Hook Bolt

Sample Hinge

Sample Dog Bolt

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Sample Letter plate

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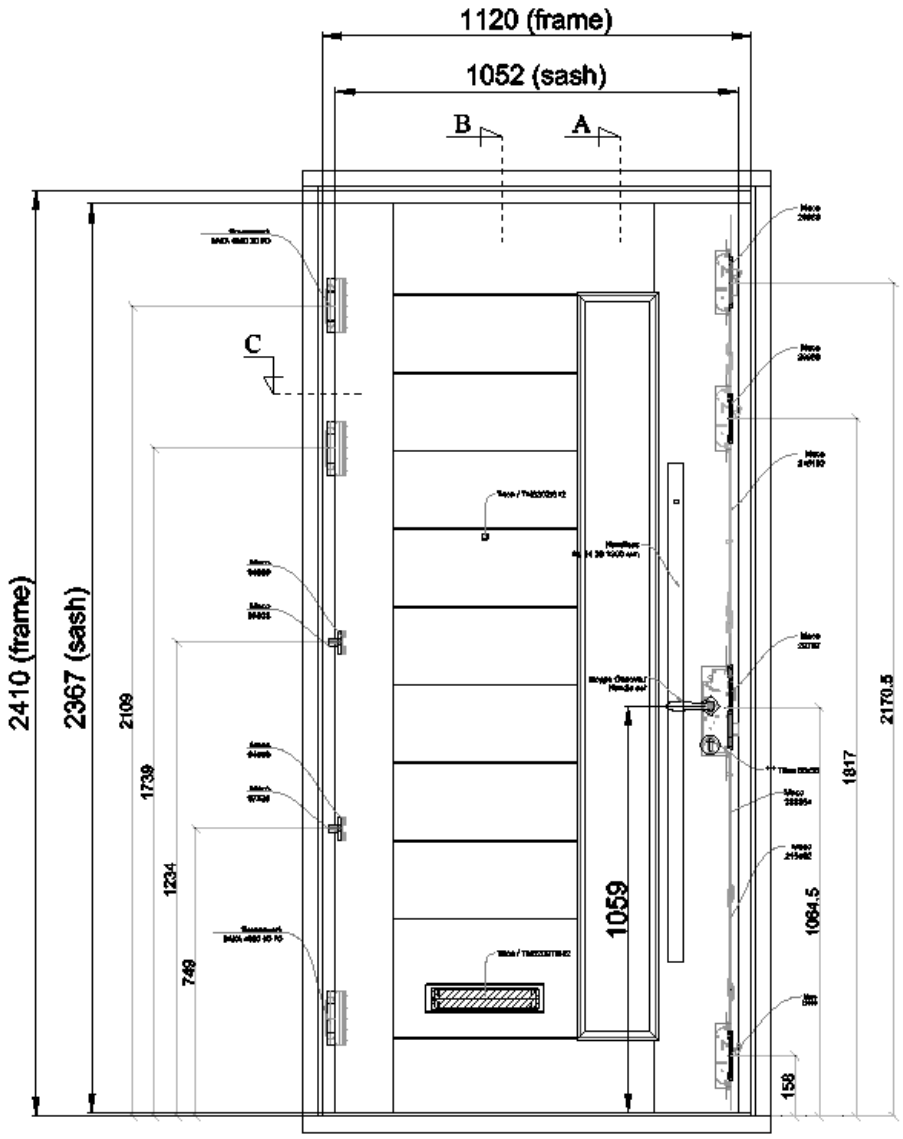
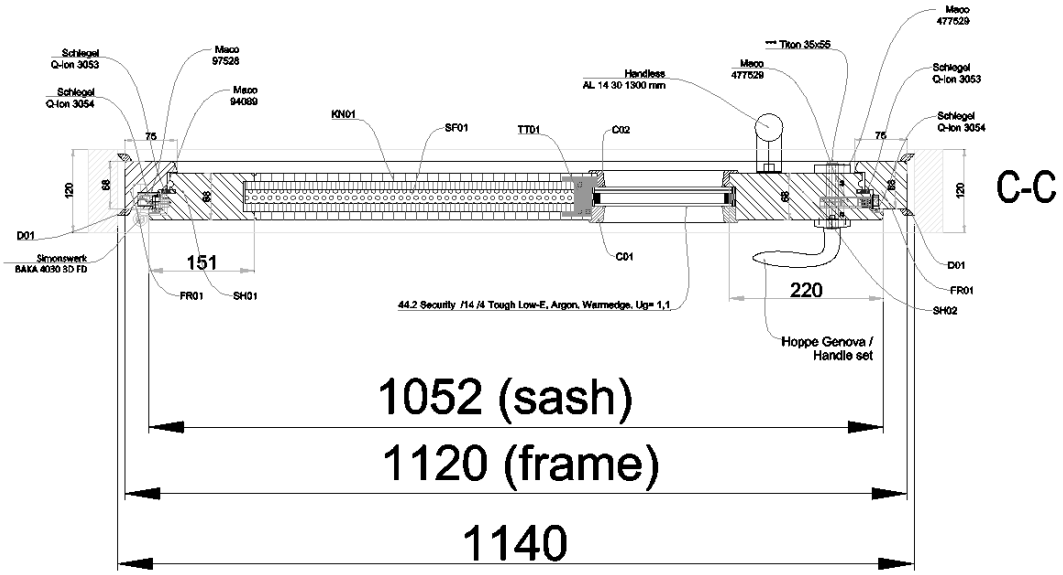
TEST SPECIMEN

Figure 1- General Elevation of Test Specimen (External Face)



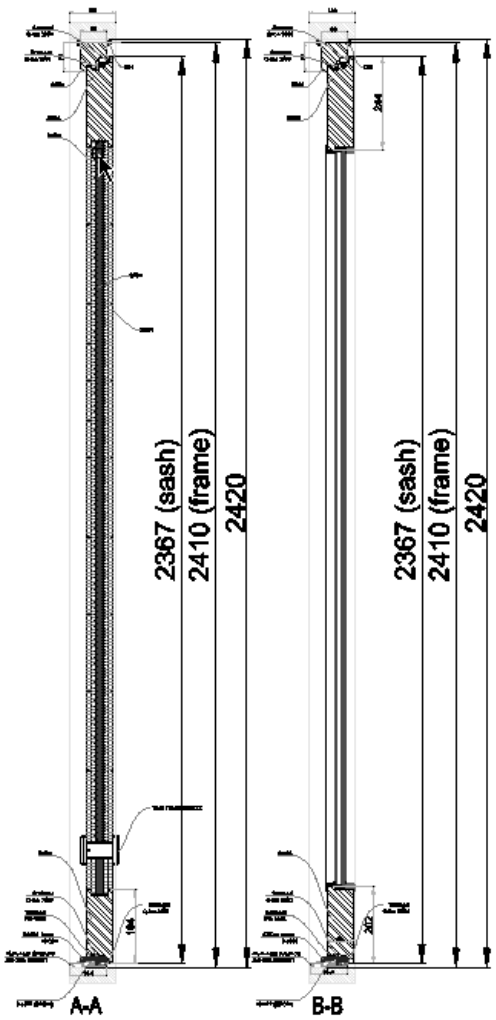
Do not scale. All dimensions are in mm

Figure 2 – Horizontal section



Do not scale. All dimensions are in mm

Figure 3 – Vertical section



Do not scale. All dimensions are in mm

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SCHEDULE OF COMPONENTS

(Refer to Figures 1 to 3)
(All values are nominal unless stated otherwise)
(All other details are as stated by the sponsor)

Variants

None

Item		Description
1. Door frame head		
Material	:	Wood / Pine (Hecht & Kloth)
Density	:	450 kg/m^3 (stated)
Overall section size	:	68 x 75 mm
Rebate	:	15 mm
Fixing jamb to head joints	:	Finger Joint / Conduit
Details of adhesive		
i. supplier	:	SOUDAL (Belgium)
ii. reference	:	D4105333
2. Door frame jamb		
Material	:	Wood / Pine (Hecht & Kloth)
Density	:	450 kg/m^3 (stated)
Overall section size	:	68 x 75 mm
Rebate	:	15 mm
Fixing jamb to sill joints	:	Finger Joint / Conduit
Details of adhesive		
i. supplier	:	SOUDAL (Belgium)
ii. reference	:	D4 105333
3. Door frame threshold		
Supplier	:	Tuna Aluminum
Reference	:	336 - (106 & 107)
Material	:	Aluminium & K4477 (EPDM) Seal
Overall section size	:	96 x 22 mm
Fixing to sill	:	
i. type	:	Screw
ii. size	:	5 x 60 mm
iii. quantity	:	6 No

Item		Description
4. Door leaf framing		
Overall Size	:	1052 x 2367 mm
Material	:	Wood / Pine (Hecht & Kloth)
Density	:	450 kg/m3
Doorleaf framing section sizes		
i. stile	:	68 x 151 mm & 68 x 220 mm
ii. top rail	:	68 x 236 mm & 68 x 244 mm
iii. bottom rail	:	68 x 194 mm & 68 x 202 mm
Glazing rebate	:	18 mm
Corner fixing method	:	Finger Joint / Conduit
Details of adhesive		D4
i. supplier	:	SOUDAL (Belgium)
ii. reference	:	105333
5. Door leaf weather seals		
Description	:	Schlegel (Germany)
Manufacturer	:	Schlegel
Reference	:	Q Lon 3053, Q Lon 3054 and PB-1018
Fixing method	:	Put into the seal groove
Position	:	All four edges
Continuity	:	Uninterrupted by hardware
6. Door leaf panels		
Material	:	Plywood
Density	:	660 kg/m3
Overall size	:	480 x 1937 mm
Thickness	:	68 mm
Fixing into rebate	:	Nail
7. Door leaf glass (IGU)		
Supplier	:	YILDIZ CAM
Thickness	:	26 mm - Configuration (44.2 Laminated / 14 / 4 Toughened Low-E Warmedge Spacer)
Overall size	:	197 x 1928 mm
Nominal edge clearance	:	4 mm
8. Glazing setting blocks		
Supplier	:	Hecht & Kloth
Material	:	Wood / Pine 450 kg/m3
Thickness	:	4 mm
Overall size	:	52 x 100 mm
9. Glazing beads		
Material	:	Wood / Pine Hecht & Kloth
Density	:	450 kg/m3
Overall size	:	24 x 22 mm
Fixing method	:	
i. type	:	Straight Brad Nails (Stainless Steel) & Silicone
ii. size	:	18x18x10 mm

Item		Description
10. Hinges		
Supplier	:	***Simonswerk***
Description	:	BAKA 3D Hinge
Reference	:	4030 3D FD
Primary material	:	Steel
Quantity	:	3
Size of knuckle	:	20 mm (Diameter)
Size of blades	:	3,5x39x140mm
Fixing hinge to doorleaf		
iv. type	:	Wood screws into doorleaf
v. size	:	5 x 40 mm
vi. quantity	:	5No
Fixing hinge to frame		
i. type	:	Pins
ii. size	:	M6x45 bolt
iii. quantity	:	2No
Position of hinge		
i. top hinge	:	2109 mm from bottom of door to center of hinge
ii. middle hinge	:	1739 mm from bottom of door to center of hinge
iii. bottom hinge	:	255 mm from bottom of door to center of hinge
11. Dog bolts		
Supplier	:	***MACO***
Description	:	Dog bolts (Lock & Lock Keeps)
Reference	:	97528 & 94089
Material		Steel
Quantity & position	:	2No & 2No
Overall size		
i. dog bolt	:	58x42x21 mm
ii. retaining ring / keeper	:	58x32x24 mm
12. Lock		
Supplier	:	MACO (Austria)
Description	:	Door lock Z-TS
Reference	:	238354
Position	:	1064,5 mm from bottom of door to centre of spindle/lock
Fixings		
i. type	:	Screws
ii. size	:	3.5 x 35 mm
iii. quantity	:	15

Item		Description
13. Lock Keeps		
Supplier	:	Maco
Description	:	Striker plates
Reference		1No (29787) 3No (29980)
Material		
i. top & bottom keeps	:	29980
ii. centre keep	:	29787
Overall size		Metal in
i. top & bottom keeps	:	8x20x120 mm
ii. centre keep	:	8x20x208 mm
Fixing keeps to frame		
i. type	:	Screws
ii. size	:	4 x 30 mm
iii. quantity	:	2
14. Cylinder		
Supplier	:	Titon
Description	:	Asterion Three Star
Kitemark	:	KM 631878
Reference	:	TN62 series
Fixings		
i. type	:	Machine screw
ii. size	:	M5 x 65mm
iii. quantity	:	1 No
15. Lever handles		
Supplier	:	Handles
Description	:	Polished Chrome
Reference	:	LAZ 11 RY
Material	:	Zamak
Fixings		
i. type	:	Wood screws
ii. size	:	5 x 40mm
iii. quantity	:	2
16. Door viewer		
Supplier	:	Titon
Description	:	Polished Chrome
Reference	:	TN8302/812
Overall size	:	16mm diameter
Door hole size	:	11.7mm diameter
Fixing height (centre of viewer)	:	1509mm

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Item		Description
17. Letter Plate		
Supplier	:	Titon
Description	:	Polished Chrome
Reference	:	TN8200T/812
Aperture size	:	260 x 40mm
Door slot size	:	264 x 46.5mm
Fixing height (centre of letterplate)	:	306mm
Cowl	:	None fitted
Fixings		
i. type	:	Machine screws
ii. size	:	M5 x 74mm
iii. quantity	:	2

PERFORMANCE CRITERIA & TEST RESULTS

Clause	Result	Pass/Fail
BS6375-2 6.2 Operating forces	The average force required to enable the sample to latch must not exceed those defined in table 1 of BS EN 12217, Class 1 (75N) for external doorsets & class 2 (50N) for internal doorsets. The average force or torque required to operate the hardware must not exceed those defined for the relevant class in table 1 on BS EN 12217, Class 1 (100N or 10Nm) for external doorsets & class 2 (50N or 5Nm) for internal doorsets). The average force required to commence and maintain motion must not exceed those defined for the relevant class in table 1 on BS EN 12217, Class 1 (75N) for external doorsets & Class 2 (50N) for internal doorsets The sample met the requirements of Class 2. An average force of 33.4N was required to latch the sample. An average force of 34.7N was required to disengage the hardware. An average torque of 0.12Nm was required to lock and 0.09Nm was required to unlock the doorset. An average force of 23.93N was required to commence and maintain motion.	**PASS CLASS 2**
BS6375-2 6.3.1 Vertical load	.The doorset was tested in accordance with EN 947, under a load of 600N as required by Class 2 of EN 1192, with a preload of 200N. To achieve the requirements of the class the resultant residual deformation should not exceed 1mm, and the specimen should continue to operate normally. A load of 600N was applied, no damage was observed, and the doorset continued to operate normally. The sample met the requirements of Class 2. The deflection under full load was 1mm, and the residual deflection was 0.69mm.	**PASS CLASS 2**
BS6375-2 6.3.2 Static torsion	The doorset was tested in accordance with EN 948, under a load of 250N as required by Class 2 of EN 1192, with a preload of 200N. To achieve the requirements of the class the resultant residual deformation should not exceed 2mm, and the specimen should continue to operate normally. A load of 250N was applied, no damage was observed, and the doorset continued to operate normally. The sample met the requirements of Class 2. The deflection under full load was 23.36mm, and the residual deflection was 1.13mm.	**PASS CLASS 2**
BS6375-2 6.3.3 Soft & heavy body impact	The doorset was tested in accordance with EN 949, a soft & heavy body impact of 60J was applied as required for Class 2. To achieve the requirements of the class the resultant residual deformation in flatness should not exceed 2mm, and the specimen shall continue to operate normally. The sample met the requirements of Class 2, with a residual deformation of 0mm on the internal face, and a residual deformation of 0mm on the external face.	**PASS CLASS 2**

Clause	Result	Pass/Fail
	No damage was observed during the test	
BS6375-2 6.3.4 Hard body impact	The doorleaf was tested in accordance with EN 950, hard body impacts of 3J were applied as required for class 2. To achieve the requirements of the class the mean value of the diameters of indentation should not exceed 20mm, and the mean values of the depths of indentation should not exceed 1.0mm, with the maximum depth not exceeding 1.5mm. The sample met the requirements of class 2. The mean value of the depth of indentation was 0.12mm. The maximum value of the depth of indentation was 0.5mm. The mean value of the diameter of indentation was 8.71mm. No damage was observed during the test.	**PASS**
BS6375-2 6.4 Load-bearing capacity of safety devices	The doorset was tested in accordance with the requirements of EN 14351-1, a load of 350N was applied with the safety device engaged. This test was not carried out as no such device was fitted to the doorset.	**PASS**
BS6375-2 6.5 Resistance to repeated opening and closing	Testing not carried out	**N/T**
BS6375-3 Annex A Basic security	Testing was carried out on the doorset, the total attack time required was 3 minutes. Attacks were made with the craft knife to try and remove the beading from around the glazing and attempt to lever out the glazing. Some of the beading was removed, but no further damage was made. Total attack time was 3 minutes. Entry not achieved Entry was not gained and the test was deemed to pass.	**PASS**
BS6375-3 Annex C Closure against obstruction	Testing was carried out on the doorset. No visible damage was observed under the application of a 200N load with the bottom hinge corner obstructed from closing. Following testing the operating forces met the requirements of Class 2. An average force of 34.6N was required to latch the sample. An average force of 33N was required to disengage the hardware. An average torque of 0.11Nm was required to lock and 0.07Nm was required to unlock the doorset.	**PASS**

Clause	Result	Pass/Fail
	An average force of 24.97N was required to commence and maintain motion.	

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CONCLUSIONS

Evaluation against objective	The sample as provided by the client was subjected to operational & strength testing in accordance with BS 6375-2:2009 and failed to achieve the requirements for a UK category of use of medium duty for clauses 6.1, 6.2, 6.3 and 6.4 only. The sample was also subjected to closure against obstruction testing in accordance with BS 6375-3:2009 Annex A & Annex C and achieved the requirements
Observations & comments	

LIMITATIONS

Limitations	The results relate only to the behaviour of the specimens of the element of construction under the particular conditions of test. They are not intended to be the sole criteria for assessing the potential performance of the element in use, nor do they reflect the actual behaviour in use.
Range of door assemblies covered by this report	It is our opinion that the range of door assemblies covered by this report are limited to the following ▪ Assemblies with identical hardware fitted no further apart than in the tested assembly ▪ Assemblies of the same or smaller overall dimensions to the tested assembly
Uncertainty of Measurement	The uncertainties of measurements calculated for a confidence level of 95% throughout these tests are within the limits of these tolerances. The standard specifies the following tolerances ▪ Forces: ±2% ▪ Distances: ±1mm for tape measures ± 0.01mm for dial gauges ▪ Times: ±5s

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REVISION HISTORY

This issue of the report replaces all previous issues that are now withdrawn.

Issue No :	**Re - Issue Date :**
Revised By:	**Approved By:**
Reason for Revision:	

END OF REPORT