EMINENT
INTERNATIONAL

METHOD STATEMENT

PERFORMANCE MOCKUP TEST FOR

SLIDING DOOR

GEALAN PRIVATE LIMITED

MS. No. : BF02/06/July/2023/MS 00
MS Date & Time : 06/July/2023 & 3:25PM
File Name : BF02-Gealan Sliding Door PMU MS
Control No. EITC/MSLT/02 Issue No.00 Issued August 2022

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ACCREDITATION

LABORATORY AND SITE TESTING

ISO / IEC 17025: General requirements for the competence of testing and calibrating laboratories by

NABL – National Accreditation Board for Testing & Calibration Laboratories

www.nabl-india.org

The testing standard(s) which is / are a subject of this document falls wholly or partly under the accreditation checked below

ISO / IEC 17025 – NABL	☑
It is not within our accreditation scope	☐

TC-11560

Contents

1. GENERAL

This method statement will be followed at the time of laboratory testing by Eminent International Testing Centre, Hyderabad, India to determine the performance adequacy of a sliding door specimen, installed by Gealan Private Limited. The tests will be performed in conformance with the accredited test procedures of *BS* test standards and according to the requirement of the project specification.

PROJECT DETAILS	
Project Name	
Client	
Consultant	
Architect	
UPVC Contractor	Gealan Private Limited

TEST SPECIMEN & PERTINENT INFORMATION	
Manufacturer	
Type	UPVC Sliding Door
Operation Type	Sliding
Specimen Size	2.4 x 2.4m
Specimen Area	5.76m^2
Specimen Flat / Curve	
Type of Glass	Toughened Glass
Glass Thickness	6mm
Weather Seal Dimension	
Weather Seal Type	
Fasteners Type & Material	
Fasteners Dimension	
Locking (if applicable)	

2. TEST PARAMETERS AND PERFORMANCE REQUIREMENTS

Test	Criteria	Reference
1. Water Tightness Test Test Pressure and duration	BS EN 1027: 2016 Refer table 1 in section 7.1.3.	 BS EN 12208
2. Resistance to Wind Load Test Test Pressure P1 P2 P3	BS EN 12211: 2016 2200 Pa 1100 Pa 3300 Pa	 Provided by client BS EN 12210

Note: The testing criteria were taken from the standard

3. DESCRIPTION OR MODIFICATION OR ADJUSTMENTS

Will be mentioned in final report (if any)

4. COMPLIANCE STATEMENT

- The sliding door will be tested as described in this document, in conformance with the test procedures of BS test standards and according to the requirement of the project specification.
- The effect of the test results relates only to the specimen tested and are valid under the conditions during the test.

5. TEST SEQUENCE AND PROGRAM

09:00 AM Briefing
09:30 AM Water Tightness Test
11:30 AM Resistance to Wind Load Test (P1)
12:15 PM Resistance to Wind Load Test (P2)
01:00 PM Resistance to Wind Load Test (P3)

Note: Program sequence may vary depending on test results.

6. SPECIFICATION COMPLIANCE

Testing will be carried out under the direction of the Testing Engineer of EITC in compliance with the requirements of Project Specification and Standards.

7. TEST PROCEDURES

Specimen verification: Before starting the test, Testing Engineer should verify that the label stuck on the mock-up chamber and method statement has same file number.

Fit the chamber to the perimeter of the test specimen to cover the entire test specimen. Seal all the joints between test specimen and test chamber connections. The chamber shall be capable of withstanding the required differential test pressures. Blower is connected to provide positive or negative pressure difference across the specimen. At least one pressure tap will be kept inside the chamber to measure the pressure difference between each side of the specimen. The pressure tap shall be located in an area of the chamber in which pressure readings will not be affected by any supply air.

7.1. Static Water Penetration Test BS EN 1027: 2016

7.1.1. PREPARATION

a. Install the specimen as intended for use in the actual condition without any variation which may affect the result of the test.

b. The specimen shall be fully operable, cleaned and dry.

c. Open and close all opening parts of the test specimen at least once before securing them in the closed condition.

d. Arrange a single row of spray rack nozzles equidistant 400 mm apart (+/- 10 mm) and positioned 250 mm from the surface of the test specimen with the outer most nozzles at the sides inset not less than 50 mm nor greater than 250 mm from the sides of the specimen, (refer to the “c” value in the mock up diagram). The nozzle line shall be located not more than 150 mm above the topmost horizontal joint line of any moving frame or the glazing line of any fixed glazing.

e. The nozzle axis shall be tilted in an angle $24^{o\ +2}$ below the horizontal line for test.

f. Use a single row of nozzle with each will spray an average 2 liters/minute spray.

7.1.2. TEST PROCEDURE

a. Apply three pressure pulses with the duration of increase in test pressure shall not be less than 1 second and maintained for at least three (3) seconds, 10% greater than the maximum test pressure required for the test, without however being less than 500 Pascal.

b. Spray the water at 0 pressure for the first 15 minutes and increase in an interval of 50 Pascal each lasting 5 minutes up to 300 Pascal, and from thereafter 150 Pascal interval until water emergence occurs along the internal side of the specimen. Note, the duration of each pressure step shall be within a tolerance of +1/-0 minute.

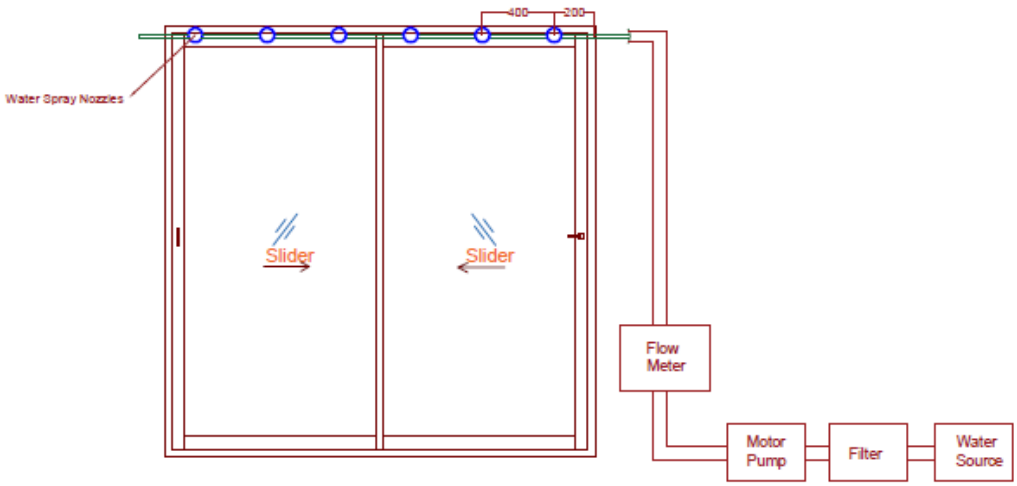
c. If there would be an emergence of any water on the inside face, it shall be recorded at which test pressure level it has occurred, the location and extent of the leakage shall be noted on a drawing of the specimen.

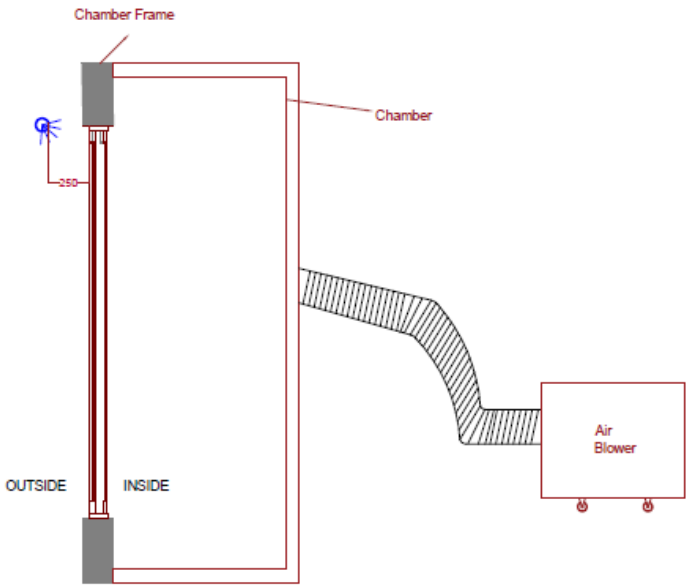
7.1.3. CLASSIFICATION (AS PER BS EN 12208)

Test Pressure (Pa)	Classification Test Method A	Specifications
0	1A	Water spray for 15min
50	2A	15 + 5 min
100	3A	20 + 5 min
150	4A	25 + 5 min
200	5A	30 + 5 min
250	6A	35 + 5 min
300	7A	40 + 5 min
450	8A	45 + 5 min
600	9A	50 + 5 min
> 600	Exxx	Above 600 Pa in steps of 150 Pa, the duration at each step shall be 5 min
NOTE: a. Specimen that allows water penetration at 0 pressure before the expiration of 15 minutes cannot be classified.		

Table 1 - Water penetration classification

Equipment setup diagram





7.2. Wind Resistance Test BS EN 12211: 2016

7.2.1. PREPARATION

a. Install the specimen as intended for use in the actual condition without any variation which may affect the result of the test. Prior to test, the sample shall be brought into the defined closing condition in accordance with the manufacturer's instructions.

b. Assure the test rig stiffness and fixing of the specimen to be sufficient to avoid adverse effects on the performance of the specimen during testing.

c. The test specimen shall be cleaned and dry.

d. Fixed the measuring devices (Linear Displacement Transducers) in position at each end and at the center of the frame member to be measured. (a frame member could be part of the opening element or the fixed frame).

7.2.2. TEST PROCEDURE

P1 Application

a. Apply three pressure pulses, each 10% greater than test pressure P1. The time to reach the maximum pressure shall be not less than one second and shall be sustained for at least 3 seconds.

b. Apply the positive test pressure P1 at a rate not exceeding 100 Pascal /second and when the pressure has been applied for 30 seconds, record the frontal deflection or the frontal displacement.

c. Reduce the pressure to 0 Pascal at a rate not more than 100 Pascal /second and after 60 +/- 5 seconds, record the residual frontal deflection or frontal displacement.

d. Repeat the procedures a) to c) in the negative test pressures.

P2 Application

a. Initially apply negative test pressure P2 and then the positive as is the last of the sequence of 50 impulses.

b. Variation of the pressure from negative to positive and the reverse shall be 7 +/- 3 seconds, and keep P2 for at least 7 +/- 3 seconds.

c. After application of the 50 cycles, open and close the moving parts of the specimen and record any damage or defects if found any.

P3 Application

a. Variation from 0 Pascals to –P3 and back from –P3 to 0 shall take 7 +/- 3 seconds, and keep P3 for at least 7 +/- 3 seconds.

b. Positive pressure is applied after a 7 +/- 3 seconds rest at 0 Pascal and application of the pressure shall be in the same duration as the negative test.

c. After the safety test, record whether the test specimen remains closed and describe any part that has been dislodged, if any.

7.2.3. TEST RESULT

a. After the safety test, record whether the test specimen remains closed and describe any parts of the test specimen which have become detached or broken.

b. Uncertainty calculation (Decision Rule):

- Total allowable deflection = TAD
- Measured deflection = MD
- Uncertainty = U

If,

1. MD ± U & MD < TAD, then test is recorded as **Pass**.
2. MD - U & MD < TAD but MD+U > TAD, then test is recorded as **Pass with comment**.
3. MD – U < TAD but MD & MD+U > TAD, then test is recorded as **Fail with comment**.
4. MD ± U & MD > TAD, then test is recorded as **Fail**.

7.2.4. CLASSIFICATION OF WIND LOAD & RELATIVE FRONTAL DEFLECTION (AS PER BS EN 12210)

a. Classification shall be according to the results of wind resistance tests to positive and negative test pressures.

Class	P1	P2*	P3
1	400	200	600
2	800	400	1200
3	1200	600	1800
4	1600	800	2400
5	2000	1000	3000
Exxxx**	xxxx		
E_{2200}	2200	1100	3300
*This pressure (P2) having been repeated 50 times **Specimen tested with wind loading above class 5, classified Exxxx- where xxxx is the actual test pressure P1			

Table 2 – Classification of wind load

b. Relative frontal deflection of the most deforming framing member of the specimen measured at test pressure P1 shall be classified as below,

Class	Relative frontal deflection
A	< 1/150
B	< 1/200
C	< 1/300

Table 3 – Classification of relative frontal deflection

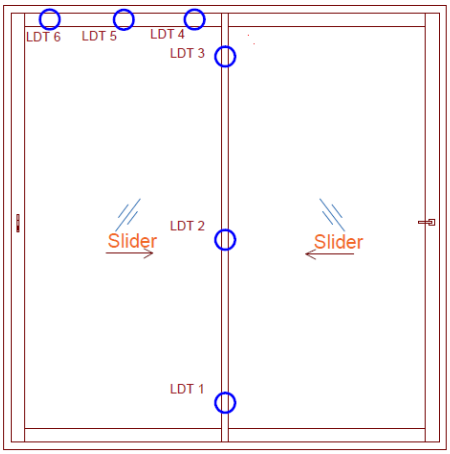
c. Wind loads and relative frontal deflection shall be combined into one overall classification as indicated below,

Wind load class	Relative frontal deflection		
	A	B	C
1	A1	B1	C1
2	A2	B2	C2
3	A3	B3	C3
4	A4	B4	C4

5	A5	B5	C5
Exxxx	AExxxx	BExxxx	CExxxx
E_{2200}	AE_{2200}	BE_{2200}	CE_{2200}
Note: In the resistance to wind load classification the number refers to the wind load class, see Table 2 and the letter to the relative frontal deflection, see Table 3			

Table 4 – Resistance to wind load - Classification

Equipment setup diagram



LDT Number	Location
1 – 2 – 3	Mullion
4 – 5 – 6	Transom

8. TESTING EQUIPMENT

Equipment used for the test as enumerated below which requires calibration are all covered by valid calibration certificates.

a. A 3-phase high pressure centrifugal blower with speed controller and damper to control the pressure within the chamber. This will be connected to the chamber via a transition piece and 5 meters of 15 cm diameter flexible duct. Speed is controlled by varying the frequency in steps of 0.1 Hz at the controller and by a remote knob control.

b. Orifice plates for measurement of air flow.

c. Data acquisition electronic equipment. Consists of 3 electronic manometers, 7 displacement transducers and software to read data, all are integrated into the excel sheet forms included herein.

d. Others (as necessary for the test to be applied, to be filled-in in a particular testing project.)

	Name	**Signature**	**Date**
MS Prepared by	Swaminathan		06/July/2023
Reviewed and Authorized by	Reji Bhami		06/July/2023
Client's Approval			

9. ANNEX

(to be attached on final report)

-End of Method Statement-