Suzhou TRYBA Building Materials Technology Co., Ltd.

TEST REPORT

SCOPE OF WORK
Tilt and Turn Window

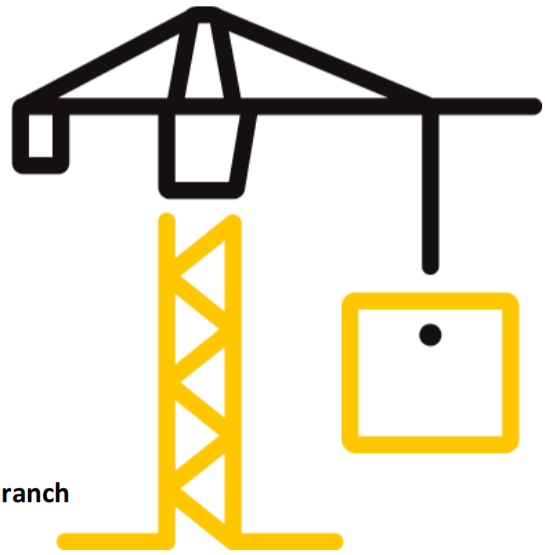
REPORT NUMBER
250901009SHF-001

TEST DATE(S)
2025-11-05 - 2025-11-06

ORIGINAL ISSUE DATE
2025-11-14

PAGES
20

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Test Report

Original Issue Date: 2025-11-14 Intertek Report No. 250901009SHF-001

Applicant: Suzhou TRYBA Building Materials Technology Co., Ltd.
Applicant Address: 36th floor, Jinhe International Building, 35 Shishan Road, Huqiu District, Suzhou City
Attn: Alisa
Product Type: Dual-action Window
Product Model: ES80
Primary product designator: Class CW - PG30 - Size Tested 1200 × 1800 mm (47.24 × 70.87 in.) - DAW
Optional secondary designator: Positive Design Pressure = +1440 Pa (30.08 psf)
Negative Design Pressure = -1440 Pa (30.08 psf)
Water penetration resistance test pressure = 290 Pa (6.06 psf)
SUBJECT: Performance testing

Product Information

Product Name	Model	Specification
Tilt and Turn Window	ES80	1200mm(Width) x 1800mm(Height)
Sample ID	**Sample Amount**	**Sample Received Date**
S250901009SHF.001	1 Set	2025-11-03
Brand	**Sample Description**	
TRYBA	The sample was a completely assembled, glazed, functional product (including hardware) and fully operable, fitted in the test apparatus in accordance with documented instructions.	

Test Methods And Standards

Test Standard	ASTM E283/E283M-2019; ASTM E547-00(R2016); ASTM E330/E330M-2014(R2021); ASTM F588-17; AAMA/WDMA/CSA101/I.S.2/A440-22 Clause 8.3.1 and Clause 8.3.6.6
Specification Standard	AAMA/WDMA/CSA 101/I.S.2/A440-22 (NAFS 2022 - North American Fenestration Standard / Specification for Windows, Doors and Skylights) Clause 8.3.1, Clause 8.3.2, Clause 8.3.3, Clause 8.3.4, Clause 8.3.5 and Clause 8.3.6.6; CSA A440S1-25 Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-22 Clause 5.3 and Clause 5.4
Test Conclusion	The results met AAMA/WDMA/CSA 101/I.S.2/A440-22 and CSA A440S1-25 requirements specified on Dual-action Window, and the results were shown in the following page.

Note:
1. This report does not involve sampling. The report only reflects conformity of the tested items of the samples provided by the testing applicant. Representativeness and authenticity of the submitted samples are responsibilities of the testing applicant.
2. This test item was conducted in one of our multi-sites address of Plant 3-5, No. 6978 Daye Road, Fengxian District, Shanghai (No. 4-South Plant, No. 161 Litai Road).

Report Authorized

Name: Gio Liu Name: John Zhang
Title: Reviewer Title: Project Engineer

INTERTEK TESTING SERVICES SHENZHEN LTD. SHANGHAI FENGXIAN BRANCH 检验检测专用章 (1)

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Test Items, Method and Results:

2 Test Result

Table 2 Test Result

Test Description	*Requirements (Class CW-PG30)*		*Results*		*Verdict*
2025/11/5					
Operating Force Test AAMA/WDMA/CSA 101/I.S.2/A440-22, Clause 8.3.1	Turn inward operation				Pass
	Maximum force to initiate motion	155 N	Maximum force to initiate motion	37 N	
	Maximum force to maintain motion	155 N	Maximum force to maintain motion	28 N	
	Maximum force to initiate motion for Operators	Reported	Maximum force to initiate motion for Operators	24 N	Reported
	Maximum force to maintain motion for Operators	Reported	Maximum force to maintain motion for Operators	20 N	
	Tilt inward operation				Pass
	Maximum force to initiate motion	155 N	Maximum force to initiate motion	40 N	
	Maximum force to maintain motion	155 N	Maximum force to maintain motion	30 N	
	Maximum force to initiate motion for Operators	Reported	Maximum force to initiate motion for Operators	25 N	Reported
	Maximum force to maintain motion for Operators	Reported	Maximum force to maintain motion for Operators	22 N	
Air Leakage Resistance Test AAMA/WDMA/CSA 101/I.S.2/A440-22, Clause 8.3.2 ASTM E283/E283M-2019	Maximum air leakage at+75 Pa	1.0 $L/s \cdot m^2$	Air leakage at +75 Pa	0.56 $L/s \cdot m^2$	Pass
	Maximum air leakage at-75 Pa	1.0 $L/s \cdot m^2$	Air leakage at -75 Pa	0.31 $L/s \cdot m^2$	
Water Penetration Resistance Test AAMA/WDMA/CSA 101/I.S.2/A440-22, Clause 8.3.3 ASTM E547-00 (R2016)	Minimum water pressure	220 Pa	Test Pressure	290 Pa	Pass
			After water sprayed for four cycles in 24 minutes at 290 Pa, no water penetration was observed.		

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Table 2 Test Result (Continued)

Test Description	*Requirements (Class CW-PG30)*		*Results*		*Verdict*
2025/11/5					
Uniform Load Deflection Test AAMA/WDMA/CSA 101/I.S.2/A440-22, Clause 8.3.4.2 ASTM E330/E330M-2014(R2021)	Minimum Design Pressure (DP)	1440 Pa	Design Pressure (DP)	+1440 Pa	Pass
			Maximum deflection at Stile	2.0 mm	
			Maximum deflection at Bottom Rail	1.0 mm	
			Design Pressure (DP)	-1440 Pa	Pass
			Maximum deflection at Stile	1.7 mm	
			Maximum deflection at Bottom Rail	1.0 mm	
Uniform Load Structural Test AAMA/WDMA/CSA 101/I.S.2/A440-22, Clause 8.3.4.3 ASTM E330/E330M-2014 (R2021)	Minimum Structural Pressure (STP)	2160 Pa	Structural Pressure (STP)	+2160 Pa	Pass
			No significant breakage or damage after ultimate strength was released.		
			Maximum permanent deformation at Stile	0.3 mm	
			Maximum permanent deformation at Bottom Rail	0.2 mm	
			Structural Pressure (STP)	-2160 Pa	
			No significant breakage or damage after ultimate strength was released.		
			Maximum permanent deformation at Stile	0.3 mm	
			Maximum permanent deformation at Bottom Rail	0.2 mm	
2025/11/6					
Forced-entry Resistance Test AAMA/WDMA/CSA 101/I.S.2/A440-22, Clause 8.3.5 ASTM F588-17	Minimum Grade 10		Test Class	Grade 10	Pass
			During the test and upon removal of loads, all locking devices were remained engaged and could not entry.		
Awning, hopper, projected hardware load test AAMA/WDMA/CSA 101/I.S.2/A440-22, Clause 8.3.6.6	Load to the sash	140 N	Deflection Measured	2.87 mm	Pass
	Deflection Limit	38.3 * A = 74.7 mm	After test, the sample did not be damaged in any way that would inhibit normal operation and there was no glazing breakage.		

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Appendix B: Test Data

B.1 Air Leakage Resistance Test – Test method ASTM E283/E283M-2019

Overall Area: 2.16 m^2

Table B.1 Test Data of Air Leakage Resistance Test

Infiltration rate (75 Pa)	0.56 $L/s \cdot m^2$	0.11 cfm/ft^2
Exfiltration rate (75 Pa)	0.31 $L/s \cdot m^2$	0.06 cfm/ft^2
Requirements (75 Pa): Maximum allowable leakage for Class CW Windows	1.0 $L/s \cdot m^2$	0.2 cfm/ft^2

The tested specimen met the requirements for Class CW Windows for Air Leakage Resistance Test as per AAMA/WDMA/CSA 101/I.S.2/A440-22.

Appendix B: Test Data

B.2 Water resistance test – Test method ASTM E547-00(R2016)

No water penetration occurred when the pressure was 290 Pa (6.06 psf).
After water sprayed for four cycles in 24 minutes at 290 Pa, no water penetration was observed.

Test result: P_{max} = 290 Pa (6.06 psf).

The tested specimen met the requirements for Class CW-PG30 for Water Penetration Resistance Test as per AAMA/WDMA/CSA 101/I.S.2/A440-22.

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Table B.2 Test Data of Uniform Load Deflection Test

Member (mm)		Test Pressure (Pa)	Deflection (mm)			Maximum Deflection(mm)
Item	Span Length		1	2	3	
Stile	1600	+P = 1440	0.5	2.5	0.5	2.0
		0	<0.1	0.2	<0.1	0.2
		-P = -1440	0.6	2.2	0.5	1.7
		0	0.1	0.4	0.1	0.3
Member (mm)		Test Pressure (Pa)	Deflection (mm)			Maximum Deflection(mm)
Item	Span Length		3	4	5	
Bottom Rail	1000	+P = 1440	0.5	1.9	1.3	1.0
		0	<0.1	0.1	0.1	0.1
		-P = -1440	0.5	1.7	0.9	1.0
		0	0.1	0.3	0.2	0.2

Table B.3 Test Data of Uniform Load Deflection Test for Stile

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Maximum Deflection		Maximum Deflection	
1440 Pa (30.08 psf)	2.0	(0.08)	1.7	(0.07)
Span length, L = 1600 mm (62.99 in.)		Deflection limit L/175 = 9.1 mm (0.36 in.)		

Table B.4 Test Data of Uniform Load Deflection Test for Bottom Rail

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Maximum Deflection		Maximum Deflection	
1440 Pa (30.08 psf)	1.0	(0.04)	1.0	(0.04)
Span length, L = 1000 mm (39.37 in.)		Deflection limit L/175 = 5.7 mm (0.22 in.)		

The tested specimen met the requirements for Class CW-PG30 for Uniform Load deflection Test at Design Pressure as per AAMA/WDMA/CSA 101/I.S.2/A440-22.

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Appendix B: Test Data

B.4 Uniform Load Structrual Test – Test method ASTM E330/E330M-2014(R2021), Procedure A

Design Pressure, P = 1440 Pa (30.08 psf)

Structural Pressure, P = 2160 Pa (45.11 psf)

Table B.5 Test Data of Uniform Load Structural Test

Member (mm)		Test Pressure (Pa)	Permanent deformation(mm)			Maximum permanent deformation(mm)
Item	Span Length		1	2	3	
Stile	1600	+P = 2160	–	–	–	–
		0	0.2	0.5	0.2	0.3
		-P = -2160	–	–	–	–
		0	0.2	0.5	0.2	0.3
Permanent Deformation limit, L x 0.3% = 4.8 mm						
Member (mm)		Test Pressure (Pa)	Permanent deformation(mm)			Maximum permanent deformation(mm)
Item	Span Length		3	4	5	
Bottom Rail	1000	+P = 2160	–	–	–	–
		0	0.2	0.5	0.4	0.2
		-P = -2160	–	–	–	–
		0	0.2	0.5	0.4	0.2
Permanent Deformation limit, L x 0.3% = 3.0 mm						

Table B.6 Test Data of Uniform Load Structural Test For Stile

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Perm. Set		Perm. Set	
2160 Pa (45.11 psf)	0.3	(0.01)	0.3	(0.01)

Table B.7 Test Data of Uniform Load Structural Test For Bottom Rail

Test Pressure	Deflection Measurements, mm (in.)			
	Positive		Negative	
	Perm. Set		Perm. Set	
2160 Pa (45.11 psf)	0.2	(0.01)	0.2	(0.01)

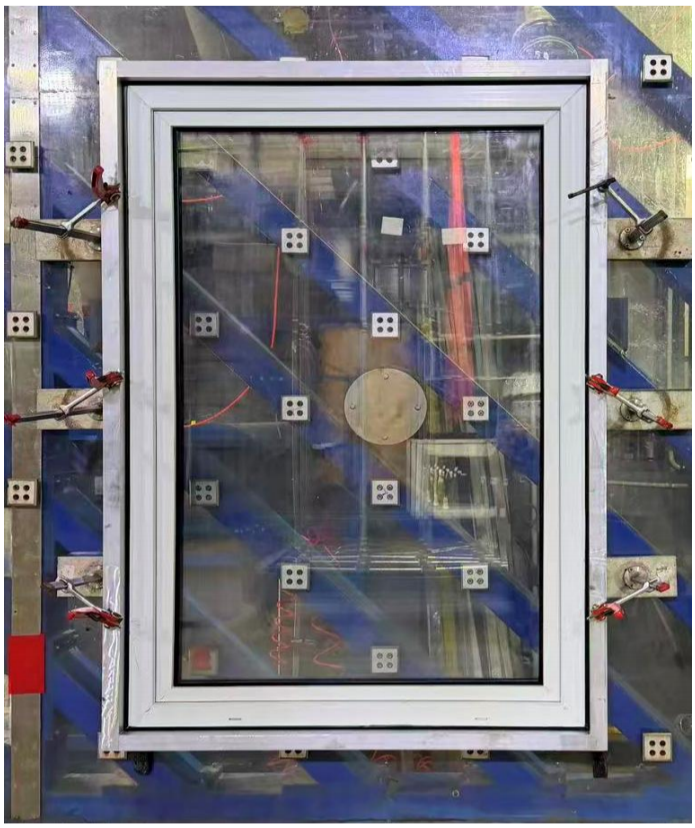
After the test loads were released, there was no failure or permanent deformation of any part of the window system that would cause the test specimen to be inoperable. There was no permanent deformation which was in excess of 0.3% of its span.

The tested specimen met the requirements for Class CW-PG30 for Uniform Load Structure Test at Structural Pressure as per AAMA/WDMA/CSA 101/I.S.2/A440-22.

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Appendix C: Sample Received Photo



Revision:

NO.	Date	Changes
250901009SHF-001	2025-11-14	First issue