

TEST REPORT SUMMARY OF RESULTS

Product manufacturer:	Hansen Polska Sp. z o. o. Ul. Lotniskowa 17, 36-060 Głogów Małopolski, Poland		
Product type:	Casement window		
Product series/model:	Hansen Millenium		
Primary product designator:	Class CW – PG50 - Size tested 1200 x 3050 mm (47 4/16" x 120 1/16" in)		
Optional Secondary Designator:	Positive ASD design pressure (DP) =	2400Pa	(50,13psf) pass
	Negative ASD design pressure (DP) =	-2400Pa	(-50,13psf) pass
	Positive Structural Test Pressure (STP) =	3600Pa	(75,19psf) pass
	Negative Structural Test Pressure (STP) =	-3600Pa	(-75,19psf) pass
	Water penetration resistance test pressure =	440Pa	(9,19psf) pass
	Air leakage =	±75Pa	(±1.57pfs) pass
Test completion date:	14/08/2024		
Reference must be made to Report No. MLTB-USCA-0152-2024, dated 05/09/2024, for complete test specimen description and detailed test results.			

Mobilne Laboratorium Techniki Budowlanej Sp. z o.o.
(Mobile Laboratory of Construction Technology Sp. z o. o.)

lab manager
Adam Mścichowski



Adam Mścichowski
Laboratory manager



AAMA/WDMA/CSA 101/I.S.2/A440:22**Laboratory test report**

Report Number:	MLTB-USCA-0152-2024
Date of testing:	14.08.2024
Report date:	05.09.2024
Record retention end date:	05.09.2034
Report to:	Hansen Polska Sp. z o. o., Ul. Lotniskowa 17, 36-060 Głogów Małopolski, Poland
Product type:	Casement window
Product tested:	Side hung outward window opening
Product series/model:	Hansen Millenium
Size tested:	1200 x 3050 mm (47 4/16" x 120 1/16" in)
Performance Class:	CW
Performance Grade:	50

In accordance with the customer contract:

Performance Class:		Performance Grade:	
CW		PG 50	
Test Specification:	AAMA/WDMA/CSA 101/I.S.2/A440:22 North American Fenestration Standard/ Specification for windows, doors, and skylights.		
-	Dimensions	procedure	PB-01 issue 1/2020
pt. 8.3.1	Operating Force	standard	E2068 – 00
pt. 8.3.2	Air leakage resistance test	standard	ASTM E283/E283M–19
pt. 8.3.3	Water penetration resistance test	standard	ASTM E547-00/E331-00
pt. 8.3.4	ASD design pressure (DP)	standard	ASTM E330/E330M
pt. 8.3.4	Structural Test Pressure (STP)	standard	ASTM E330/E330M
pt. 8.3.5	Forced entry resistance	standard	ASTM F588



Table of contents

1	General information	3
2	Test methods	4
3	Test specimen mounting	5
4	Description of the test specimen	6
5	Test results	11
5.1	Operating force	11
5.2	Air leakage resistance test.....	12
5.3	Water penetration resistance test by cyclic static air pressure difference	13
5.4	Water penetration resistance test by uniform static air pressure difference	14
5.5	Uniform load deflection test at design pressure (DP)	15
5.6	Uniform load structural test (STP)	17
5.7	Operating force after uniform load structural test (STP).....	19
5.8	Forced-entry resistance test	20
6	Annexes to the test report	21



1 General information

Conditioning the test object: minimum 24 hours before the test.

The test was carried out on a stand made of a rigid steel frame with movable steel supports, in which test objects of various dimensions can be mounted.

Measurement uncertainty data is available from the MLTB laboratory.

The laboratory confirms compliance with the requirements, i.e. assesses whether the product meets the requirements for a specific class. When making decisions, taking into account the level of risk associated with the adopted rule (wrong choice - acceptance or rejection), the Laboratory applies the binary rule of confirming compliance with the use of the guard band (test result with the specified measurement uncertainty), where the result:

- increased by the expanded uncertainty at the confidence level of 95% will not exceed the limit for a specific class, will be assessed as meeting the requirements,
- increased by the expanded uncertainty at the confidence level of 95% exceeds the limit for the specified class, it will be assessed as non-compliant.

The adopted rule, in accordance with the document ILAC-G8:09/2019, gives us <2.5% probability of incorrectly accepting or rejecting the result.



2 Test methods

AAMA/WDMA/CSA 101/I.S.2/A440:22 - North American Fenestration Standard/ Specification for windows, doors, and skylights.

ASTM E283/E283M-19 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

ASTM E547-00 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.

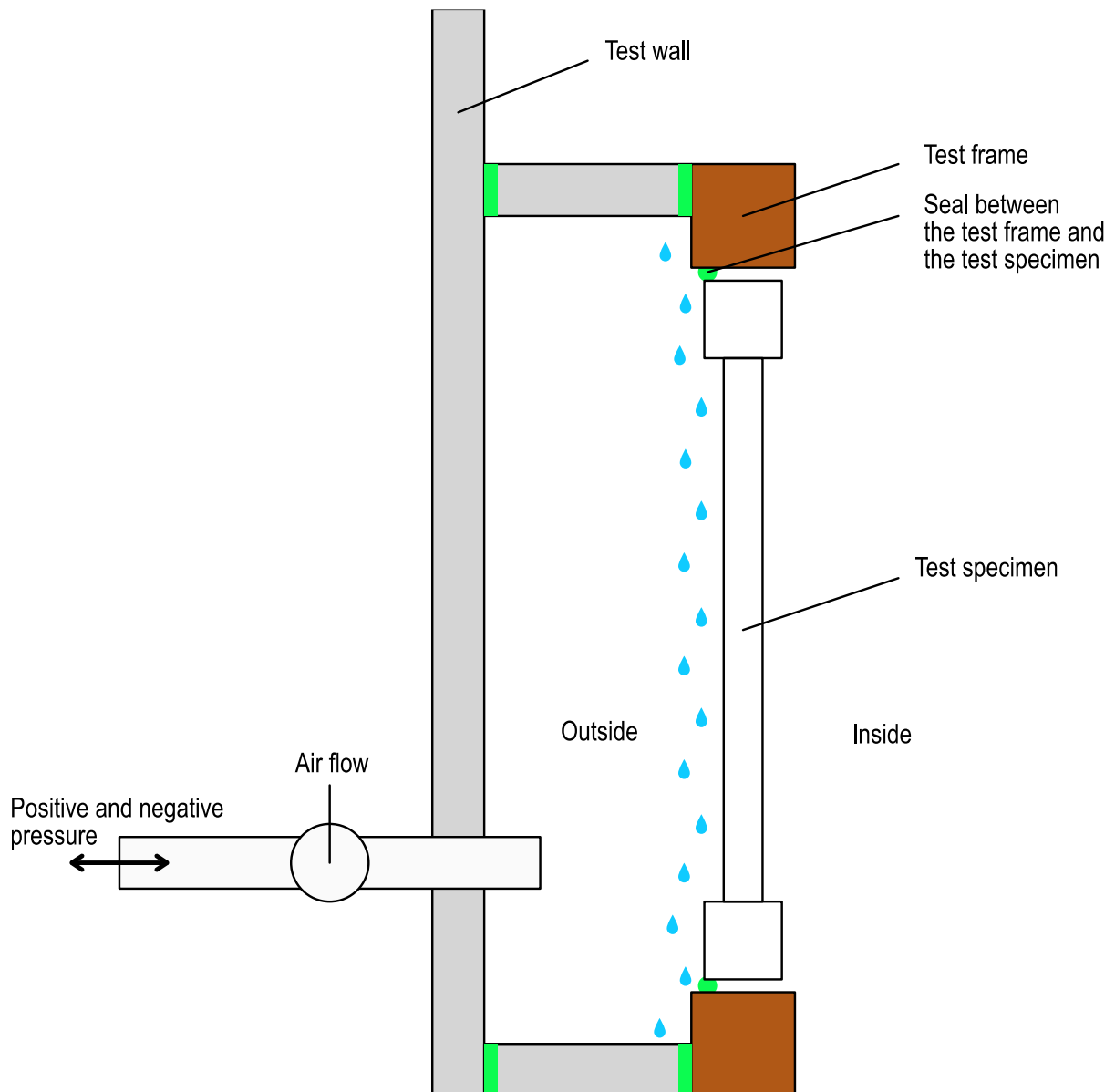
ASTM E331-00 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

ASTM F588 – 17 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact



3 Test specimen mounting



4 Description of the test specimen

Detailed technical drawings can be found in the chapter "Annexes to the test report".

*Note: Information from the customer.

Product type	Casement window
Model*	Hansen Millenium
Mode of operation	Side-hung outward opening

External dimensions

Name	Width [mm]	Height [mm]
Frame window	1200	3050
Window area	3,66 m ²	
Sash window	1130	2964
Sash area	3,35 m ²	
Glazing sash window	1109	2944

External dimensions: measurement from the inside of the test object.

Drainage system	Sum of holes	Dimension [mm]
Frame window-outside	5	6x35
Frame window-inside	5	6x35
Sash window	3	6x35

Decompression system	Sum of holes	Dimension [mm]
Frame window-outside	n/a	n/a
Frame window-inside	n/a	n/a
Sash window	2	Ø8

Components

System profiles name*	Hansen Millenium
-----------------------	------------------

Type	Material*	No. catalogue*	Reinforcing profile*	No. catalogue*
Frame	aluminum with polyamide thermal break	421783	n/a	n/a
Threshold	aluminum with polyamide thermal break	431643	n/a	n/a
Sash	aluminum with polyamide thermal break	423313	n/a	n/a
Glazing bead	aluminum	424273	n/a	n/a
Other	158861 - drip cap of aluminum in the upper part of frame			
Surface finish	raw aluminum			

Type	Connection method
Frame	aluminum sections cut at an angle of 45°, glued, screwed- screw stainless steel A2 4,8 x 32 mm;
Threshold	aluminum sections cut at an angle of 45°, glued, screwed- screw stainless steel A2 4,8 x 32 mm;
Sash	aluminum sections cut at an angle of 45°, glued, screwed- screw stainless steel A2 4,8 x 32 mm;
Glazing bead	pressed into the sash



Type	Material*	No. catalogue*	Installation*
Frame external gaskets	n/a	n/a	n/a
Frame central gaskets	n/a	n/a	n/a
Frame internal gaskets	n/a	n/a	n/a
Sash external gaskets	EPDM	162491	pulled manually
Sash central gaskets	n/a	n/a	n/a
Sash internal gaskets	EPDM	162491	pulled manually
Mullion external gaskets	n/a	n/a	n/a
Mullion central gaskets	n/a	n/a	n/a
Mullion internal gaskets	n/a	n/a	n/a
Glazing external gaskets	EPDM	162341	pulled manually
Glazing internal gaskets	Acrylic 3M tape	162481	pulled manually

Building hardware Producer*	MILA Garant
Hinges Producer*	Panidis S.A.
Opening function	Side-hung outward opening
Mechanism & Locking points	Central locking system. 5 pcs. locking points
Locking pressure	n/a

Glazing Producer*	Pilkington IGP Sp. z o. o.
Glazing composition*	External plane: 8mm tempered glass Gap width: 14mm Alu Spacer Internal plane: 44.2mm float glass
Glazing method*	Structural silicone DC 776, plastic pads

Conditions during in the testing location

Temperature		Humidity	Atmospheric pressure
[°C]	[°F]	[%]	[hPa]
25	77	56	-----



Photographic documentation



Interior view of the tested object mounted on the test stand.





Locking components in frame and sash.



Hinges.





Locking points in the window (left, right).



5 Test results

5.1 Operating force

The test was carried out on a stand made of a rigid steel frame with movable steel supports, in which test objects of various dimensions can be mounted.

The test was performed in accordance with the E2068-00 standard without any changes to the procedure.

Measurements were made using method B using a dynamometer.

The test object has not been modified in a way that affects the test results.

Reference document / Test specification: AAMA/WDMA/CSA 101/I.S.2/A440:22, pt. 8.3.1.

Measurement results

Measurement no	Sash opening [N]			Sash closing [N]		
	unlocking the fittings	breakaway force	in-motion operating force	in-motion operating force	breakaway force	locking the fittings
1	20,3	6,95	6,20	6,65	6,35	13,0
2	20,5	8,40	4,80	6,55	5,78	12,8
3	19,8	8,75	6,95	5,85	7,15	12,5
4	19,7	7,55	5,40	5,30	6,45	12,8
5	19,5	6,80	6,05	5,75	6,30	12,4
6	18,9	6,65	5,15	6,20	5,96	12,8
7	18,9	7,10	5,45	6,00	7,25	12,5
8	18,5	7,45	5,60	5,95	7,40	12,4
9	19,0	10,2	5,55	6,50	6,70	12,7
10	19,3	9,45	7,40	6,65	5,50	13,1
Average [N]	19,4	7,81	5,79	6,18	6,49	12,7
Maximum allowable operating force 155N						

Conditions during in the testing location

Temperature		Humidity	Atmospheric pressure
[°C]	[°F]	[%]	[hPa]
25	77	54	-----



5.2 Air leakage resistance test

Reference document/Test specification: AAMA/WDMA/CSA 101/I.S.2/A440:22, pt. 8.3.2.

Standard: ASTM E283/E283M – 19. Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

The test object was tightly attached to the test chamber with its outer side.

The test object has not been modified in a way that affects the test results.

The test was performed in accordance with ASTM E283/E283M - 19 without any changes to the procedure.

Air leak measurement results

Surface of the tested object	Air pressure difference		Total air leakage through the object		Air leakage relative to the surface		Allowed air leakage
	[m ²]	[Pa]	[psf]	[m ³ /h]	[l/s]	[m ³ /h m ²]	
3,66	+75	+1,57	0,00	0,00	0,000	0,000	1,0
	-75	-1,57	0,00	0,00	0,000	0,000	1,0
	+300	+6,27	1,20	0,33	0,328	0,091	n/a
	-300	-6,27	0,80	0,22	0,219	0,061	n/a

Conditions during in the testing location

Temperature		Humidity	Atmospheric pressure
[°C]	[°F]	[%]	[hPa]
25	77	50	972



5.3 Water penetration resistance test by cyclic static air pressure difference

Reference document/Test specification: AAMA/WDMA/CSA 101/I.S.2/A440:22, pt. 8.3.3.

Standard: ASTM E547-00 (2016). Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.

The test object was tightly attached to the test chamber with its outer side.

The test object has not been modified in a way that affects the test results.

Sprinkling water on the test object was carried out from its external side.

The test was performed in accordance with ASTM E547-00 (2016) without any changes to the procedure.

Water penetration test and observations

Cycle No.	Pressure difference		Cycle time	Observations, result
	[Pa]	[psf]	[s]	
1	440	9,19	300	no visible leaks
	0	0,0	90	no visible leaks
2	440	9,19	300	no visible leaks
	0	0,0	90	no visible leaks
3	440	9,19	300	no visible leaks
	0	0,0	90	no visible leaks
4	440	9,19	300	no visible leaks
	0	0,0	90	no visible leaks

Note: pressurized water spray time 0Pa/0psf = 60s.
The test object was sprinkled with water in the amount of min. 3.4l/min/m² (5.0gph/sqft).

Conditions during in the testing location

Temperature		Humidity	Atmospheric pressure
[°C]	[°F]	[%]	[hPa]
25	77	50	972



5.4 Water penetration resistance test by uniform static air pressure difference

Reference document/Test specification: AAMA/WDMA/CSA 101/I.S.2/A440:22, pt. 8.3.3.

Standard: ASTM E331-00 (2016). Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

The test object was tightly attached to the test chamber with its outer side.

The test object has not been modified in a way that affects the test results.

Sprinkling water on the test object was carried out from its external side.

The test was performed in accordance with ASTM E331-00 (2016) without any changes to the procedure.

Water penetration test and observations

Pressure difference		Test time	Observations, result
[Pa]	[psf]	[s]	
360	7,52	900	no visible leaks
The test object was sprinkled with water in the amount of min. 3.4l/min/m ² (5.0gph/sqft).			
Note: the test was performed at the client's request.			

Conditions during in the testing location

Temperature		Humidity	Atmospheric pressure
[°C]	[°F]	[%]	[hPa]
25	77	44	971



5.5 Uniform load deflection test at design pressure (DP)

Reference document/Test specification: AAMA/WDMA/CSA 101/I.S.2/A440:22, pt. 8.3.4.

Standard: ASTM E330/E330M – 14. Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

The test object was tightly attached to the test chamber with its outer side.

A positive test pressure was created in the test chamber, followed by a negative test pressure.

The test was performed in accordance with ASTM E330/E330M - 14 (Procedure A) without any changes to the procedure.

No conclusions should be drawn from the performed test regarding the adequacy or inadequacy of the glass in the tested object.

To create the test pressures, it was not necessary to seal against air leakage through the tested object in the form of sticking tapes or foil.

Positive test pressure

Test pressure / Design Pressure (DP)		+2400Pa		+50,13psf		
Pre-load = 50% DP, maintenance by 10s. Removing the pressure difference, stabilization 5min., resetting the measurement sensors.						
Test pressure = 100% DP. Maintenance by 10s, deflection registration. Stabilization 5min., deformation registration.						
Window frame: A, C - L = 3050 mm, L/175 = 17,43 mm B - L = 1200 mm, L/175 = 6,86 mm						
Test pressure		Measurement points				
Pa	psf	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
+2400	+50,13	6,63	3,60	3,84	n/a	n/a
Removing the pressure difference, stabilization 5min., deformation registration.						
0	0,00	0,13	0,68	0,28	n/a	n/a
Note: No damage or impact on the functionality of the test sample was observed during the test.						



Negative test pressure

Test pressure / Design Pressure (DP)		-2400Pa		-50,13psf		
Pre-load = 50% DP, maintenance by 10s. Removing the pressure difference, stabilization 5min., resetting the measurement sensors.						
Test pressure = 100% DP. Maintenance by 10s, deflection registration. Stabilization 5min., deformation registration.						
Window frame: A, C - L = 3050 mm, L/175 = 17,43 mm B - L = 1200 mm, L/175 = 6,86 mm						
Test pressure		Measurement points				
Pa	psf	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
-2400	-50,13	-3,02	-2,40	-1,38	n/a	n/a
Removing the pressure difference, stabilization 5min., deformation registration.						
0	0,00	-0,27	-0,12	-0,10	n/a	n/a
Note: No damage or impact on the functionality of the test sample was observed during the test.						

Conditions during in the testing location

Temperature		Humidity	Atmospheric pressure
[°C]	[°F]	[%]	[hPa]
25	77	44	971



Spacing of measurement points.



5.6 Uniform load structural test (STP)

The test object was tightly attached to the test chamber with its outer side.

A positive test pressure was created in the test chamber, followed by a negative test pressure.

The test was performed in accordance with ASTM E330/E330M - 14 (Procedure A) without any changes to the procedure.

No conclusions should be drawn from the performed test regarding the adequacy or inadequacy of the glass in the tested object.

To create the test pressures, it was not necessary to seal against air leakage through the tested object in the form of sticking tapes or foil.

Reference document/Test specification: AAMA/WDMA/CSA 101/I.S.2/A440:22, pt. 8.3.4.

Positive test pressure

Test pressure / Structural Test Pressure (STP) = 150% DP		+3600Pa	+75,19 psf		
Pre-load = 50% STP, maintenance by 10s. Removing the pressure difference, stabilization 5min., resetting the measurement sensors.					
Test pressure = 150% DP. Maintenance by 10s, deflection registration. Stabilization 5min., deformation registration					
Allowed permanent deformation		0,3% x 3050 mm = 9,15 mm; 0,3% x 1200 mm = 3,60 mm			
Test pressure		Measurement points			
Pa	psf	A [mm]	B [mm]	C [mm]	
+3600	+75,19	3,72	13,81	3,73	
Removing the pressure difference, stabilization 5min., deformation registration.					
0	0,00	0,37	0,56	1,14	
Note: No damage or impact on the functionality of the test sample was observed during the test.					
Test result:		positive			

Negative test pressure

Test pressure / Structural Test Pressure (STP) = 150% DP		-3600Pa	-75,19 psf		
Pre-load = 50% STP, maintenance by 10s. Removing the pressure difference, stabilization 5min., resetting the measurement sensors.					
Test pressure = 150% DP. Maintenance by 10s, deflection registration. Stabilization 5min., deformation registration					
Allowed permanent deformation		0,3% x 3050 mm = 9,15 mm; 0,3% x 1200 mm = 3,60 mm			
Test pressure		Measurement points			
Pa	psf	A [mm]	B [mm]	C [mm]	
-3600	-75,19	-3,25	-2,80	-1,66	
Removing the pressure difference, stabilization 5min., deformation registration.					
0	0,00	-0,15	-0,19	-0,15	
Note: No damage or impact on the functionality of the test sample was observed during the test.					
Test result:		Positive			



Conditions during in the testing location

Temperature		Humidity	Atmospheric pressure
[°C]	[°F]	[%]	[hPa]
26	78,8	40	971



photo. 1 Spacing of measurement points.



A handwritten signature in blue ink, located in the bottom right corner of the page.

5.7 Operating force after uniform load structural test (STP)

The test was carried out on a stand made of a rigid steel frame with movable steel supports, in which test objects of various dimensions can be mounted.

The test was performed in accordance with the E2068-00 standard without any changes to the procedure.

Measurements were made using method B using a dynamometer.

The test object has not been modified in a way that affects the test results.

Reference document / Test specification: AAMA/WDMA/CSA 101/I.S.2/A440:22, pt. 8.3.1 and pt. 8.3.4.3.

Measurement results after STP tests

Measurement no	Sash opening [N]			Sash closing [N]		
	unlocking the fittings	breakaway force	in-motion operating force	in-motion operating force	breakaway force	locking the fittings
1	17,2	27,5	15,2	16,5	17,1	11,2
2	17,0	31,1	15,5	17,4	16,4	10,4
3	16,0	29,5	16,4	20,2	20,1	9,30
4	16,0	30,2	17,5	20,8	20,7	10,2
5	16,3	31,2	13,6	19,4	17,4	10,0
6	16,4	30,8	12,8	13,4	16,1	9,40
7	16,7	30,1	15,9	14,5	18,0	10,3
8	16,6	32,5	17,4	16,1	17,2	10,1
9	16,1	31,2	17,4	14,6	17,6	9,70
10	16,3	29,9	12,3	15,1	12,9	10,4
Average [N]	16,4	30,5	15,5	16,7	17,5	10,1

Maximum allowable operating force 155N

Conditions during in the testing location

Temperature		Humidity	Atmospheric pressure
[°C]	[°F]	[%]	[hPa]
26	78,8	41	-----



5.8 Forced-entry resistance test

The test object was tightly attached to a testing stand made of a rigid metal frame.

The test was performed in accordance with ASTM F588 – 17 without any changes to the procedure.

No conclusions should be drawn from the study as to the suitability or inadequacy of glass in the facility being tested. Reference document/Test specification: AAMA/WDMA/CSA 101/I.S.2/A440:22, pt. 8.3.5.

Type window	Type B
Performance level	Grade 40

Casement window

Test	Time/Load	Result
Disassembly Test	5 min.; Tools: spatula, straight head screwdriver, standard slot-type pliers	All locking devices remain engaged and entry cannot be gained; Pass
Assembly test B1. Sash (as casement)	30 s. L2 + L2 – 667N	All locking devices remain engaged and entry cannot be gained; Pass
Assembly test B2. Sash (as casement)	30 s. L2 + L2 – 667N, L1 – 1334N	All locking devices remain engaged and entry cannot be gained; Pass
Assembly test B3. Sash (as casement)	30 s. L2 + L2 – 667N, L1 – 1334N	All locking devices remain engaged and entry cannot be gained; Pass
Lock Hardware Manipulation Test	10 min.; Tools: spatula, a piece of black annealed 16 gauge straight	All locking devices remain engaged and entry cannot be gained; Pass
Sash Manipulation Test	10 min.; Manipulation by hand: push, pull	All locking devices remain engaged and entry cannot be gained; Pass

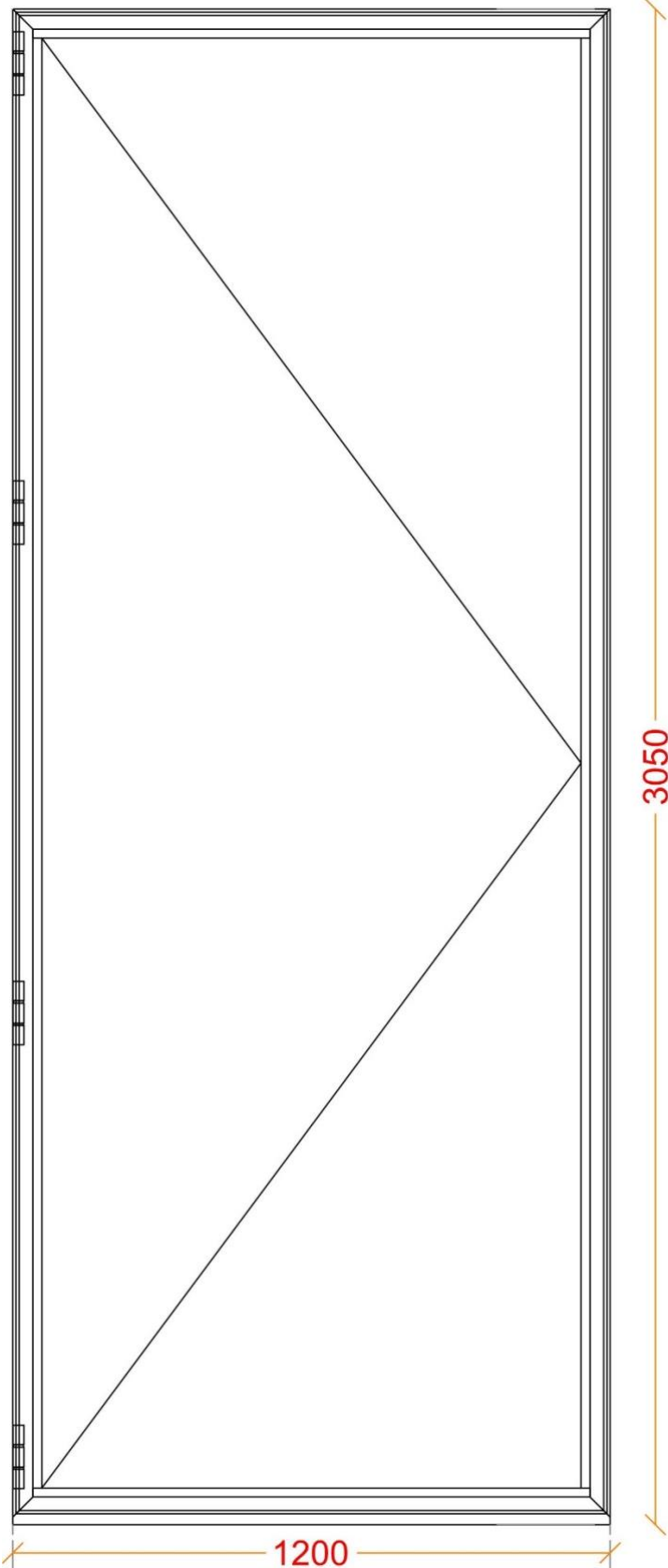
Conditions during in the testing location

Temperature		Humidity	Atmospheric pressure
[°C]	[°F]	[%]	[hPa]
24	75,2	59	-----

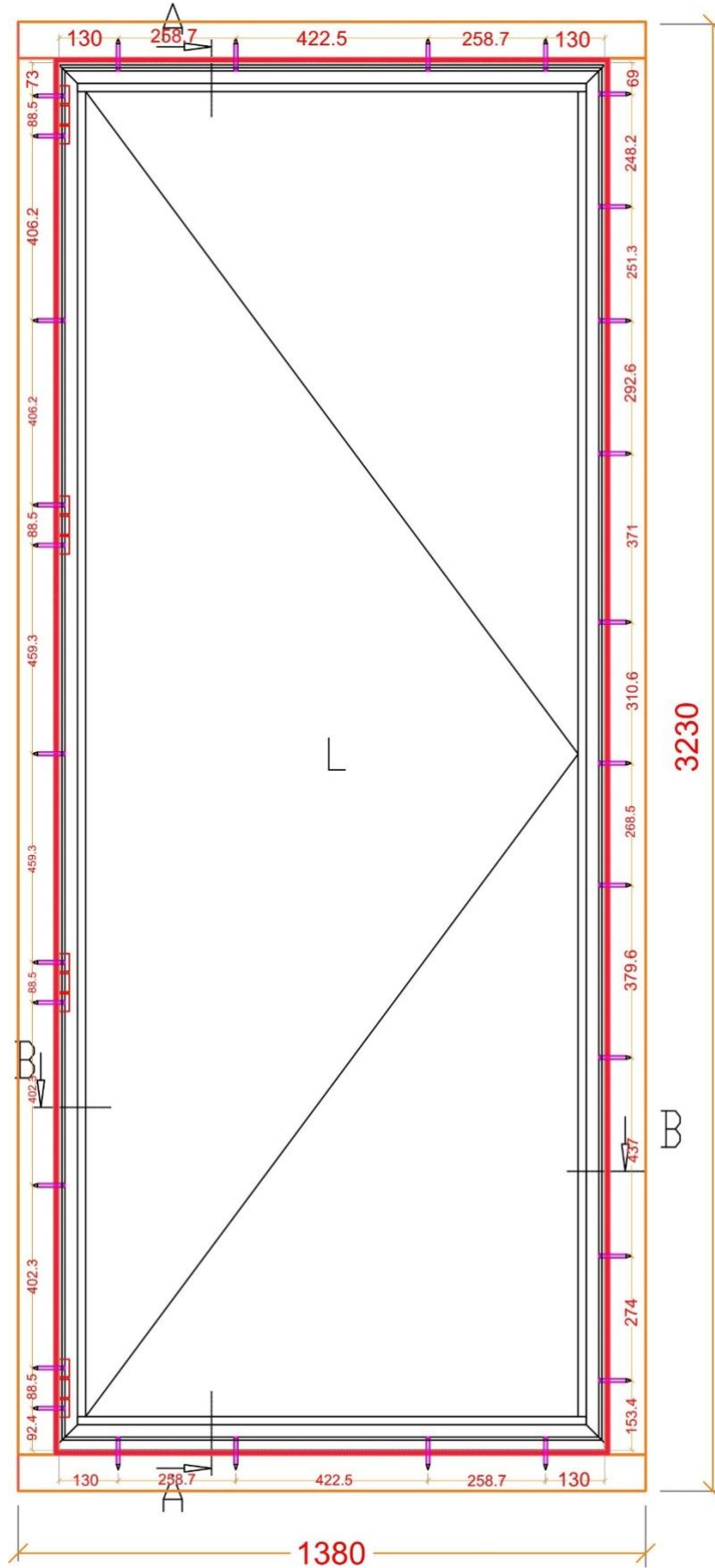


6 Annexes to the test report

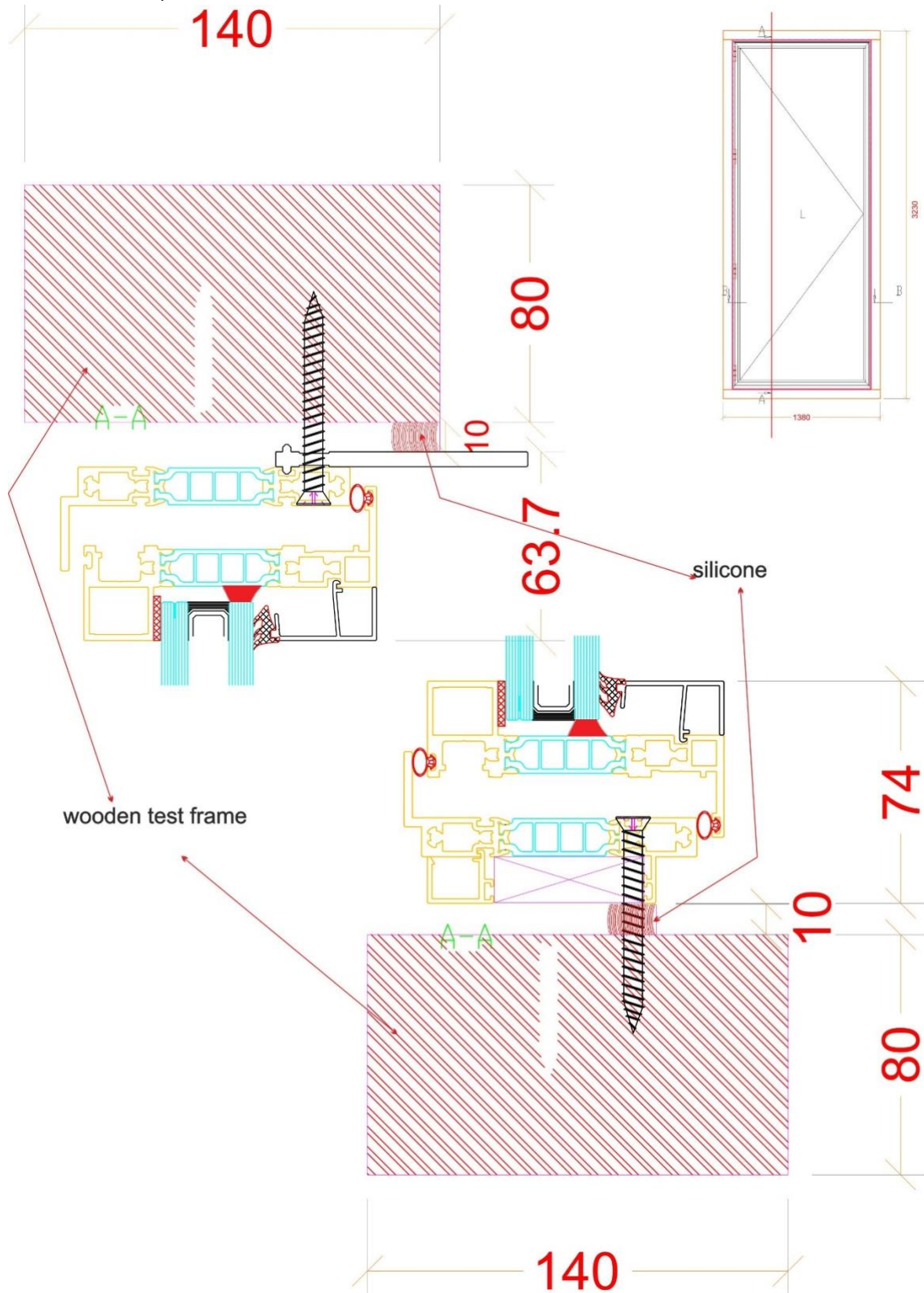
External dimensions.

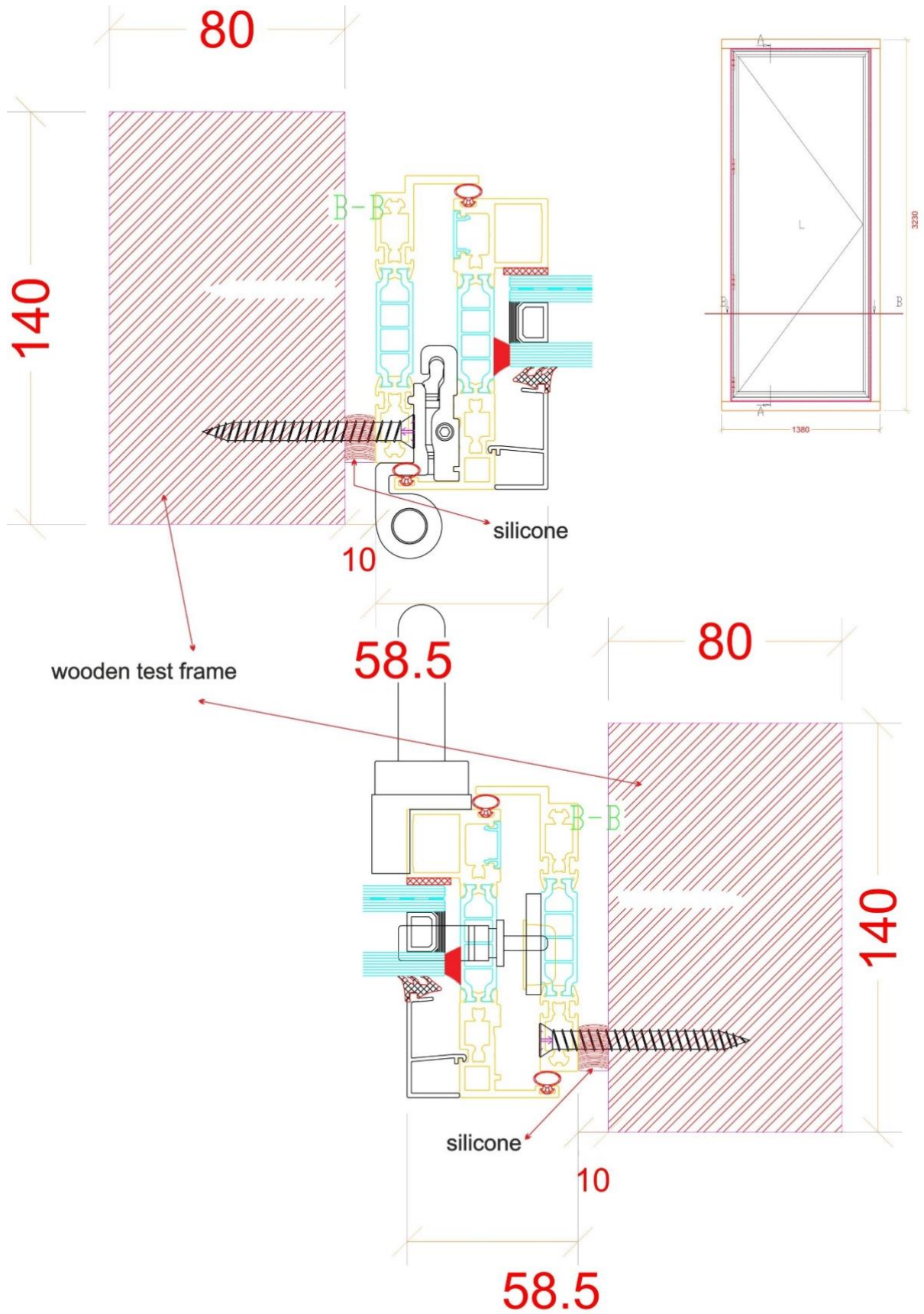


Mounting the test frame to the window frame - place of the installation.

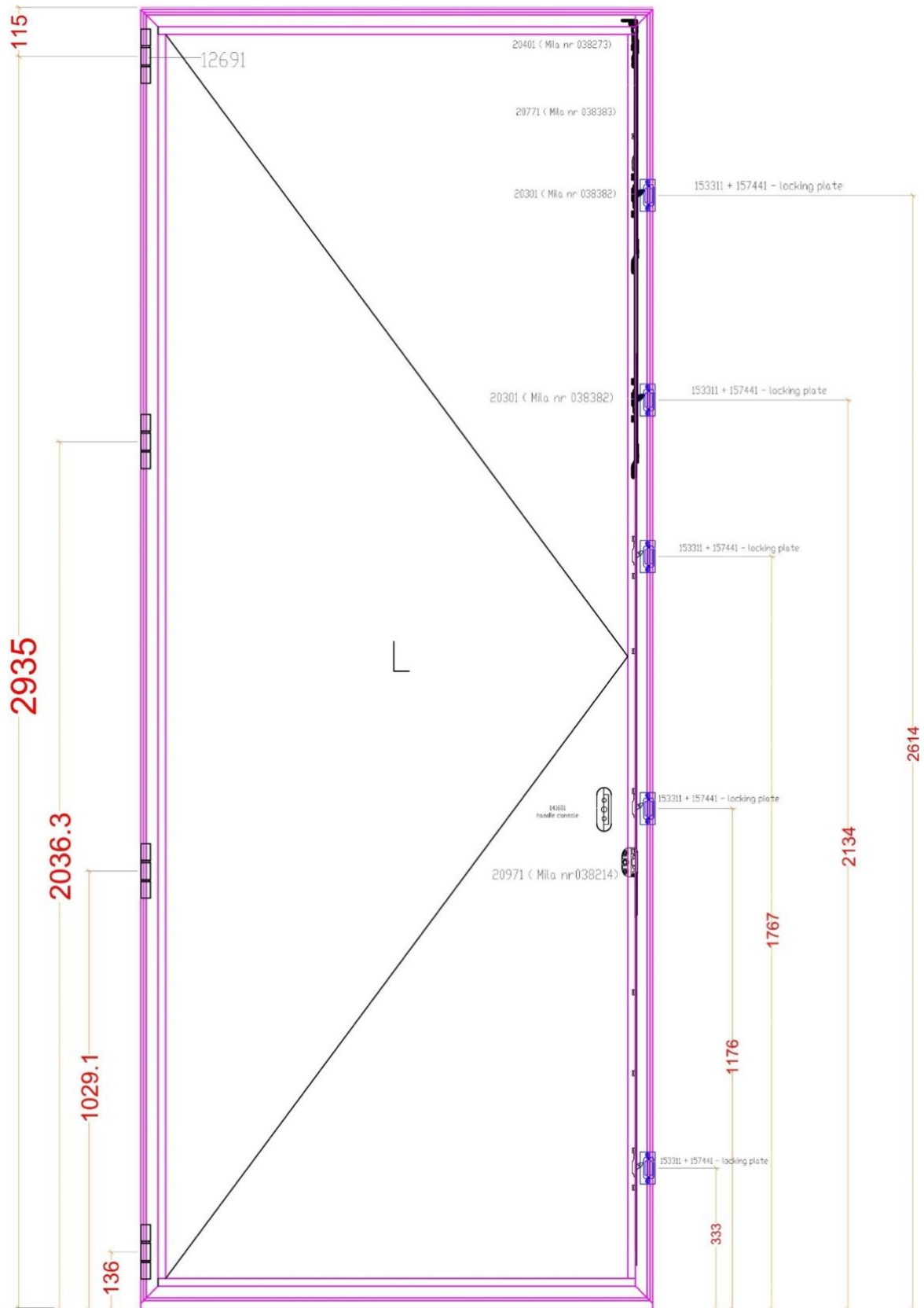


Cross - section of profiles with the test frame.

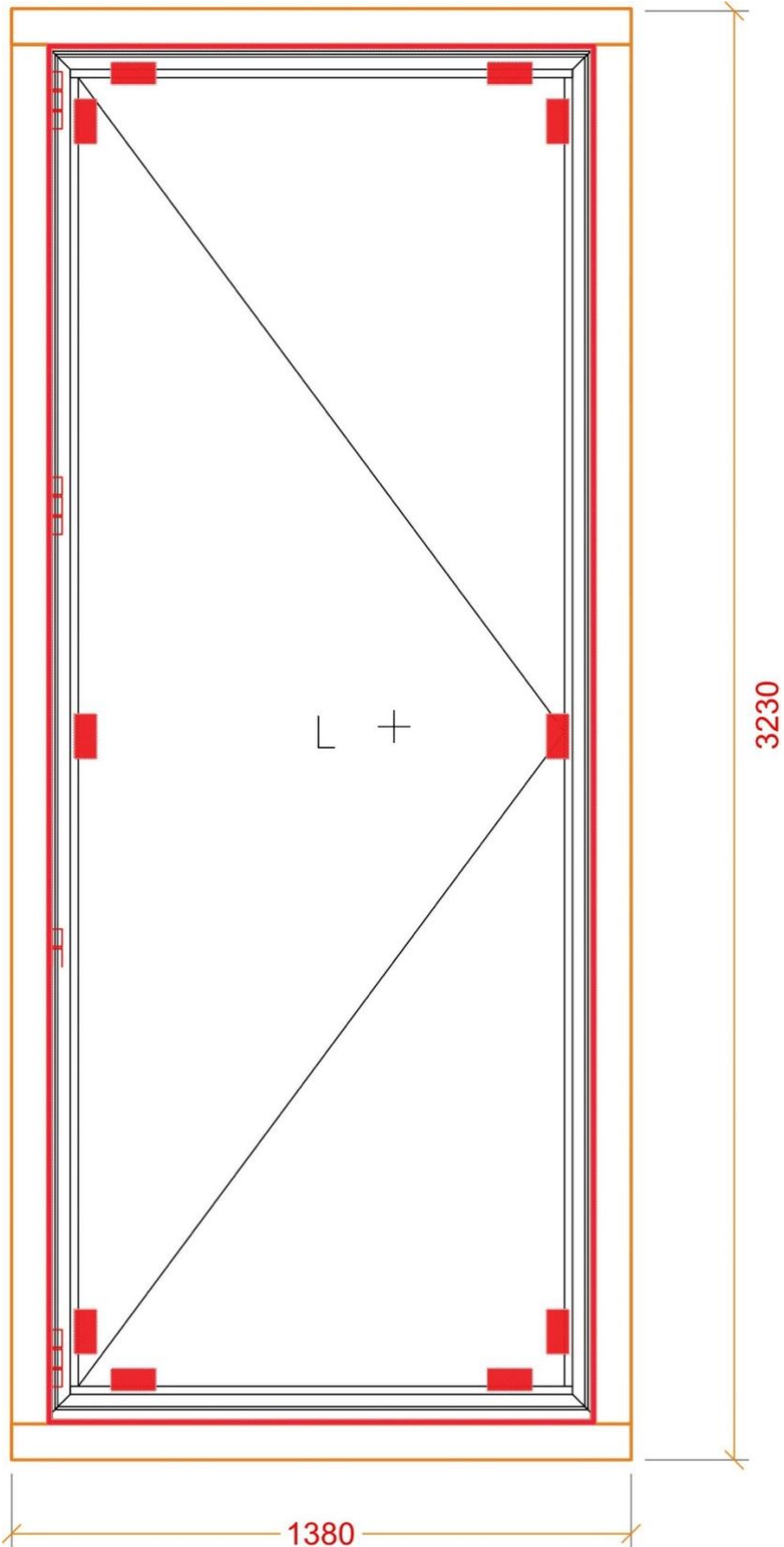




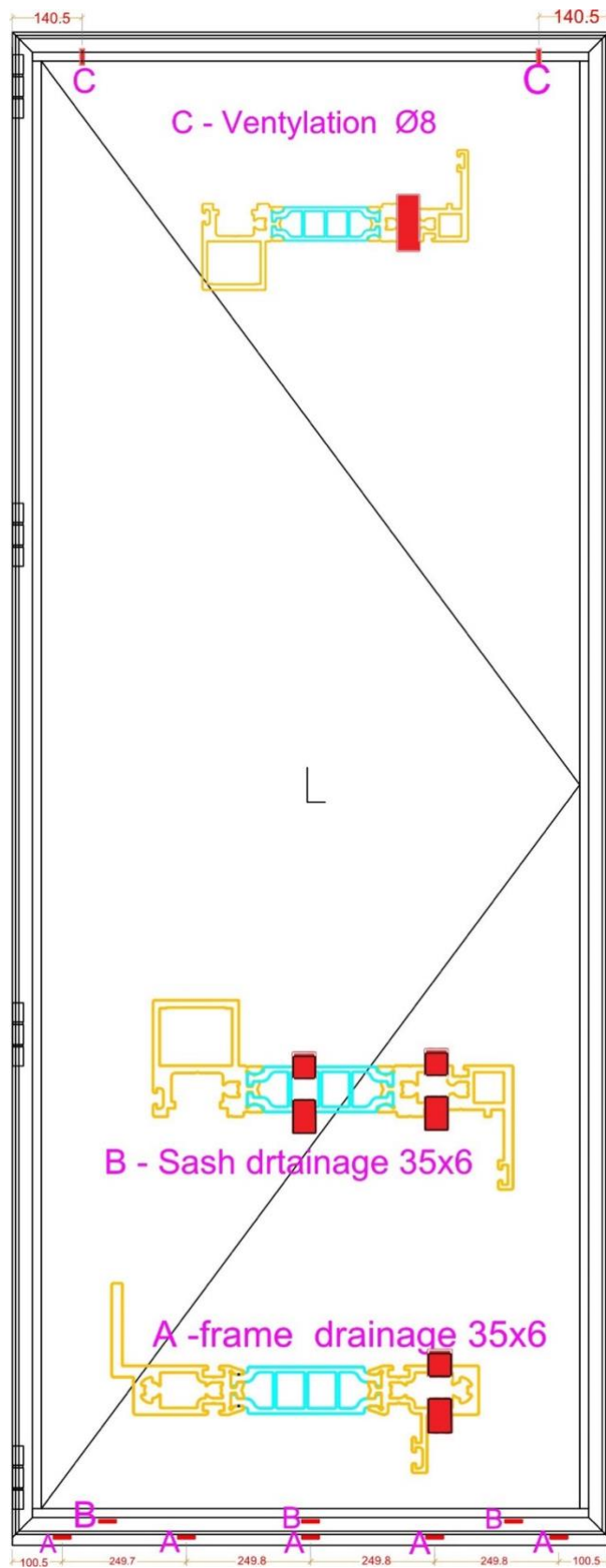
Placement of the fittings.



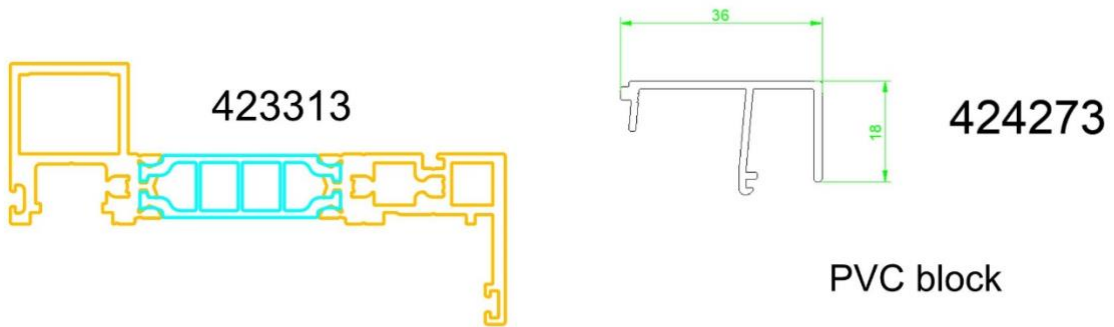
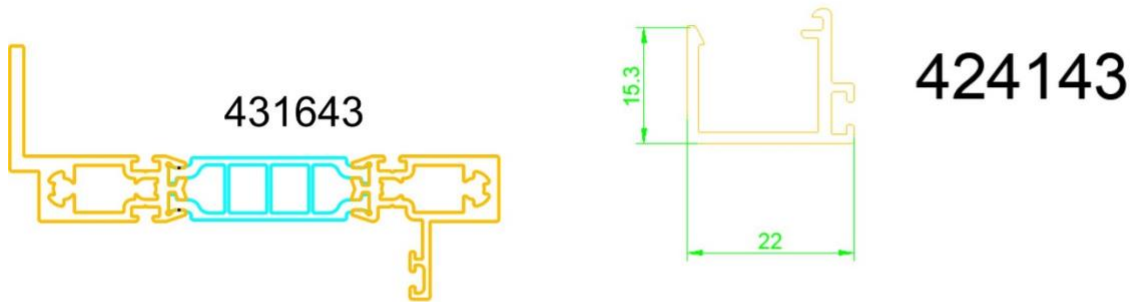
Placement of the pads under the glass.



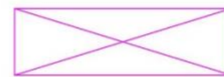
Decompression and drainage elements-frame.



Cross - sections of profiles - elements.



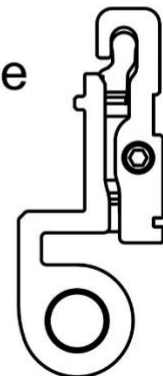
PVC block



12691

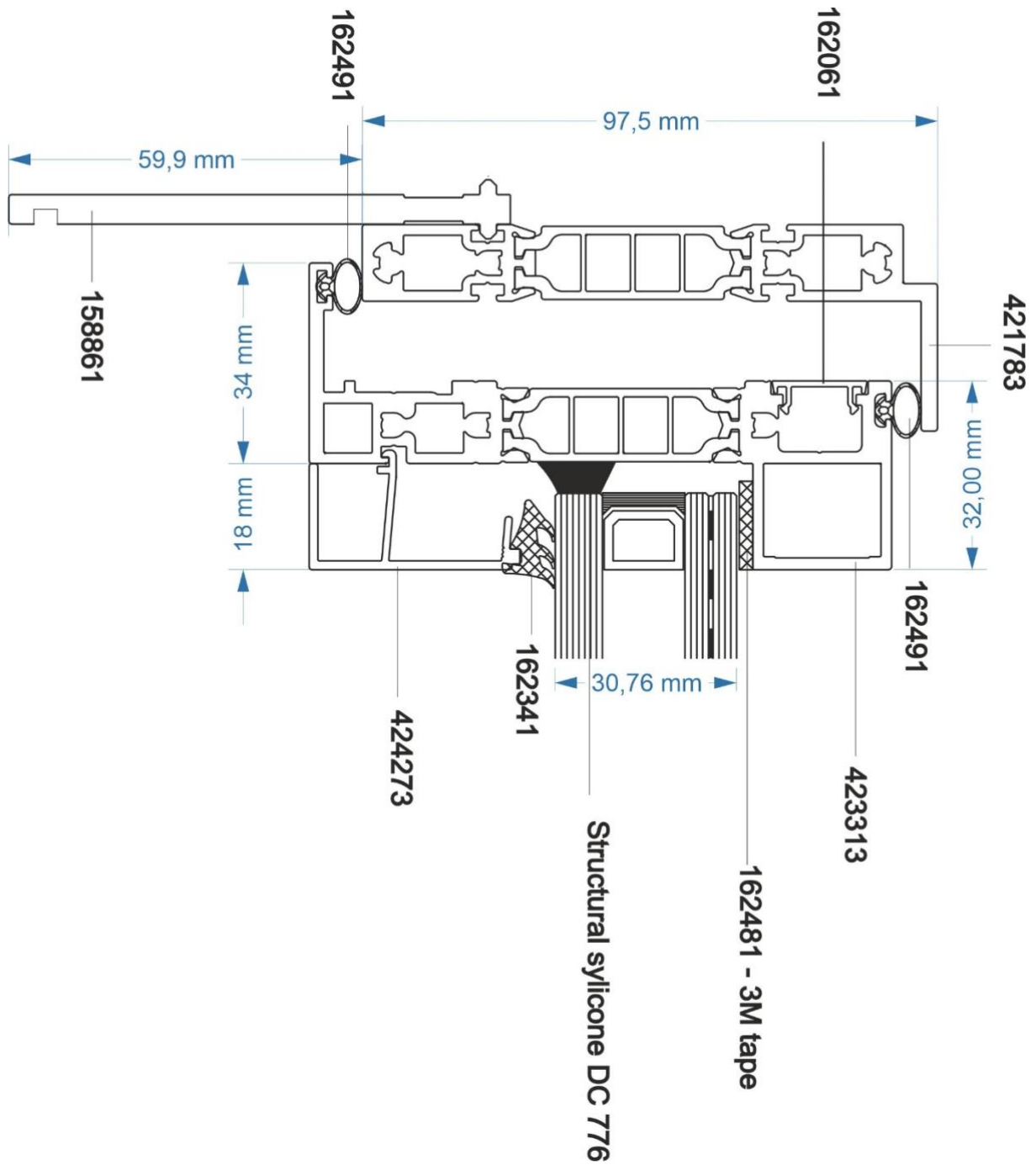


162481 - 3M tape



Cross - sections of profiles:

Frame 421783 + drip cap 158861 – sash 423313 – upper section



Technical documentation for the components used.



Declaration of Performance

CE DoP 13/427026/1

Product	
1.	Pilkington Optifloat™ Clear, Toughened, 8 mm Argon (90%) 14mm Pilkington Optilam™ Clear, Laminated, 8.8 mm (44.2)
2.	Intended use in buildings and construction works when installed in accordance with the installation instructions contained in the product documentation
3.	Harmonised standard EN 1279-5: 2018
4.	Manufacturer Pilkington IGP Sp. z o.o.; Sandomierz, ul. Portowa 24
5.	System of assessment and verification of constancy of performance (AVCP) - system 3
6.	Initial Type Tests done by Notified Body no 0757, 1004, 0074
7.	Declaration of Performance
Essential Characteristics	Performance
Resistance to Fire	NPD
Reaction to Fire	NPD
External Fire Performance	NPD
Bullet Resistance	NPD
Explosion Resistance	NPD
Burglar Resistance	NPD+P2A
Pendulum Body Impact Resistance	1(C)2+1(B)1
Resistance Against Sudden Temperature Changes and Temperature Differentials	200+40 K
Wind, Snow, Permanent and Imposed Load Resistance	120+45/45 MPa
Direct Airborne Sound Insulation	NPD
Thermal Properties	2.6 W/m ² K
Radiation Properties	
Light Transmittance / Reflectance	0.80/0.14/0.15
Solar Transmittance / Reflectance	0.63/0.12/0.12
g Value	0.72
Durability	Pass

8. The performance of the product identified in point 1 is in conformity with the declare performance in point 7

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4

Signed for and on behalf of the manufacturer by:

Krzysztof Skarbinski
Quality Director Pilkington IGP
03/12/2021





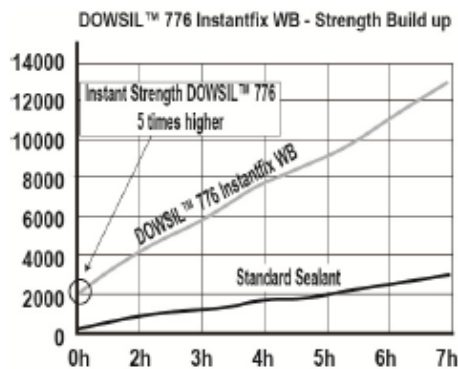
Technical Data Sheet

DOWSIL™ 776 Instantfix WB

Instant strength neutral cure silicone for window & door assembly

Features & Benefits

- Easy-to-use one-part silicone
- Low squeeze-out
- Provides instant Green Strength
- UV- and weather -resistant
- Primerless adhesion to a wide range of substrates such as PVC, coated wood, glass, etc.
- Neutral cure
- Low odor
- Suitable for automated assembly applications
- Elastic bonding silicone
- Structural capability for window bonding applications similar to Dow construction two-part silicones
- Temperature stability over a wide range: -50°C to +150°C
- Fast strength build up supports productivity enhancements due to fast handling of bonded units (see Figure 1)
- Saves time as no buffer for strength build up required
- For factory glazing and on-site application

**Figure 1**

*™Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow
 DOWSIL™ 776 Instantfix WB
 © 2017–2020 The Dow Chemical Company. All rights reserved.



Applications

- DOWSIL™ 776 Instantfix WB is a one-part silicone sealant specifically designed for window & door bonding application that require immediate handling and processing of the units. It provides immediate strength directly after application, enhancing productivity. DOWSIL™ 776 Instantfix WB is a silicone which shows primerless adhesion to a variety of substrates typical for windows and doors. As a one-part silicone it is suitable for manual and automated processes and provides excellent long-term durability.

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Test ¹	Property	Unit	Result
As supplied – uncured state			
CTM 97B	Specific gravity	g/ml	1.58
ASTM D2202	Flow (sag or slump)	mm	0
ASTM C 679	Tack-free time (23°C, 50% R.H.)	minutes	30
CTM 663A	Curing time (23°C, 50% R.H.)		
	After 24 hours	mm	2
	After 72 hours	mm	4
CTM 1430	Immediate strength	Pa	1500
As cured after 7 days at +23°C 2 mm sheet (ISO 37)			
CTM 99A	Durometer hardness, Shore A	points	47
CTM 137A	Modulus at 100% elongation	MPa	1.0
CTM 137A	Tensile strength at break	MPa	1.8
CTM 137A	Elongation at break	%	500
Properties after 28 days cure at 50% RH and +23°C (73°F) 12 mm x 12 mm x 50 mm H-Piece (ISO 8339)			
ISO 8339	Elongation at break	%	> 100
ISO 8339	Tensile strength	MPa	1.2
	Service temperature range	°C	-50 to +150

1. CTM: Corporate Test Method, copies of CTM's are available on request.
ASTM: American Society for Testing and Materials.
ISO: International Standardization Organization.

Description

DOWSIL™ 776 Instantfix WB is a one-part, neutral curing alkoxy silicone sealant designed specifically for window bonding application.

Neutral alkoxy silicones cure at room temperature on exposure to water vapor in the air, giving off a small amount of alcohol.



Technical Specifications and Standards

Regulation or protocol	Conclusion	Version of regulation or protocol
French VOC regulations	A+	Regulation of March and May 2011 (DEVL1101903D and DEVL1104875A)
French CMR components	Pass	Regulation of April and May 2009 (DEVP0908633A and DEVP0910046A)
Italian CAM Edilizia	Pass	Decree 11 January 2017 (GU n.23 del 28-1-2017)
AgBB/ABG	Pass	Anforderungen an bauliche Anlagen bezoglich des Gesundheitsschutzes (ABG), Entwurf 31.08.2017/August 2018 (AgBB)
Belgian Regulation	Pass	Royal decree of May 2014 (C-2014/24239)
EMICODE	EC 1	April 2019
Indoor Air Comfort	Pass	Indoor Air Comfort 6.0 of February 2017
Blue Angel (DE-UZ 123)	Pass	DE-UZ 123 for "Low-Emission Sealants for Interior Use", (January 2019)
BREEAM International	Exemplary IV	BREEAM International New Construction v2.0 (2016)
BREEAM Norway	Pass	BREEAM-NOR New Construction v1.2 (2019)
CDPH	Pass	

Green Strength

DOWSIL™ 776 Instantfix WB provides immediate Green Strength. Once applied and substrates assembled together, DOWSIL™ 776 Instantfix WB is able to withstand certain dynamic and constant loads.

This property is unique and can eliminate the usage of tapes for pre-fixing. It is therefore able to enhance productivity, can save time and labor cost. The immediate Green Strength is about 5 times higher than any other standard sealant which typically allows to move freshly bonded window units and window components immediately.¹

¹Please refer to Figure 1 (see end of this document).

How to Use

DOWSIL™ 776 Instantfix WB is a ready to use silicone sealant. It provides excellent strength and adheres to a wide range of most common window materials such as PVC, coated wood, metal and glass. DOWSIL™ 776 Instantfix WB can be used for fully automated robotized applications and is also suitable for manual applications.

It has good workability and ease of use properties, low string and a good resistance compression. There is far less squeeze out as seen with standard sealants.

As it is a moisture curing sealant, the reaction starts at the surface exposed to moisture and cures in depth. The deeper the joint is, the longer it takes the sealant to cure completely. Moisture has to migrate further to the already cured skin and as this skin becomes thicker, the reaction slows further down.

For bonding application, the joint depth in general should not be deeper than 10 mm to achieve reasonable cure times. However, the ultimate joint depth must not exceed 14–15 mm.



Bonding Application

DOWSIL™ 776 Instantfix WB offers good adhesion to most common window substrates such as PVC, coated wood, glass and metal. The sealant is compatible with most commonly used glazing components. It is compatible to DOWSIL™ neutral curing construction sealants and DOWSIL™ neutral curing insulating glass sealants.

It is important when selecting components within window bonding application to ensure adhesion and compatibility by carrying out tests.

As a one-part neutral curing system, moisture vapor/humidity is required for cure. Substrates have to be put together within the above stated open time before skin formation. High humidity level and higher temperatures accelerate the cure process.

Green Strength is continuously building up during cure. Adhesion to the substrates is developed at the same time as product cure. Although the strength build up is quite fast, the sealant will develop its final properties once completely cured. Therefore windows should not be installed before complete cure.

A further requisite for a high quality bonding application consists in an appropriate joint dimension. Depending on parameters such as glass weight, window sizes, but also frame materials and temperatures, joint dimensions may vary. Typical joint dimensions are in a range of 4 mm x 8 mm / 4 mm x 10 mm, but strongly depend on the specific parameters of the window system and the conditions it is exposed to after installation. More specific information about bonding are available in the Technical Manual for Bonded Windows. For each bonding project separately and depending on customer requirements, your local construction industry technical service will provide a tailor-made solution.

For further information please contact your local technical service engineer, who can help determining the required joint dimensions.

Cleaning

Substrates must be clean prior to application to ensure adhesion durability. All surfaces must be clean from contaminants and residues such as grease, oil, dust, water, frost, surface dirt, old sealants or glazing compounds and protective coatings. Metal, glass and plastic surfaces should be cleaned by solvent procedures. Solvent should be wiped on and off with clean, oil- and lint-free cloths. DOWSIL™ R-40 Cleaner is recommended for cleaning. The ventilation time at room temperature should be at least 1 minute. Please contact your local technical service engineer for more information.

Priming

For each project separately, it is essential that adhesion to all concerned surfaces should be tested before application. If adhesion requires priming, a primer such as DOWSIL™ 1200 OS Primer is in general recommended. When priming, the ventilation time at room temperature should be at least 1 minute.

Priming should be done within 4 hours after cleaning. If there is a greater time delay, cleaning process has to be repeated again. Project specific priming regulation needs to be discussed and approved by your local technical department. Please contact your local technical service engineer for further assistance.

Masking and Tooling

Areas adjacent to joints may be masked to ensure a neat sealant line. Do not allow masking tape to touch clean surfaces to which the silicone sealant is to adhere. Tooling should be completed in one continuous stroke before skin building. Masking tape should be removed immediately after tooling.

*™Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow
DOWSIL™ 776 Instantfix WB
© 2017–2020 The Dow Chemical Company. All rights reserved.



Maintenance	No maintenance is needed once sealant has been properly applied and cured. If glass units need to be replaced or sealant becomes damaged, sealant joint has to be cut back as much as possible. DOWSIL™ 776 Instantfix WB will adhere to cured silicone sealant which exhibits a clean knife-cut or abraded surface.
Equipment Cleaning	Once sealant is used in conjunction with a dispensing equipment, dispensing system needs to be air-tight and moisture tight as otherwise sealant will start to cure over time. Normally there is no specific cleaning required as it is a one-part silicone sealant. Material which stays uncured in the nozzle, will start to cure. To avoid that, nozzle should be covered with a moisture tight material such as metal.
Handling Precautions	PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.
Usable Life and Storage	<p>When stored at or below +30°C in the original unopened containers, DOWSIL™ 776 Instantfix WB has a usable shelf life of 12 months from the date of production.</p> <p>Storage conditions must be respected as higher temperatures will significantly reduce shelf life.</p>
Packaging Information	<p>DOWSIL™ 776 Instantfix WB is available in white and black.</p> <p>For manual application it is provided in 310 ml cartridges and 600 ml sausages as well as in 20 liter pails and 250 kg drums.</p>
Limitations	<p>DOWSIL™ 776 Instantfix WB must not be used for structural glazing applications in façade or as a sealant for insulating glass units.</p> <p>Because of the risk of incompatibility, DOWSIL™ 776 Instantfix WB must not come into contact with, or to be exposed to, sealants that liberate acetic acid.</p> <p>Prior to use DOWSIL™ 776 Instantfix WB in fully automated bonding applications, it is recommended to contact your local construction industry technical service. Each project shall be specifically and separately approved by Dow. Project approval involves the following prerequisites:</p> <ul style="list-style-type: none">• Joint dimensioning and print reviews.• Successful laboratory adhesion and compatibility testing to all relevant building components in direct or indirect contact with the bonding sealant.• Observance of professional sealant application and workmanship standards. <p>This product is neither tested nor represented as suitable for medical or pharmaceutical uses.</p>



Health and Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

dow.com

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. **NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.**



A blue ink signature of Adam Mścichowski, written in a cursive style.

We, Panidis S.A., declare that our product:
 Η Μακεδονική Πανίδης Α.Β.Ε.Ε., δηλώνει ότι το προϊόν μας:

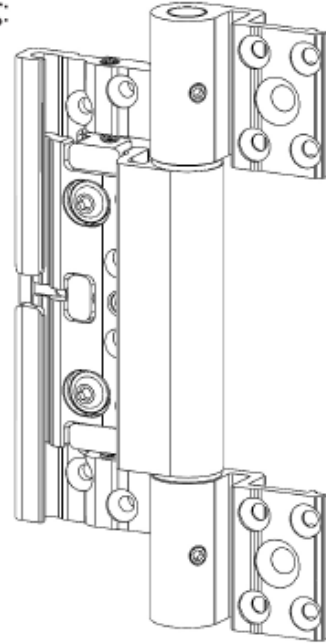
Description: Single Axis Hinge
 Περιγραφή: Μονοαξονικός Μεντεσές

ΗΜΗ-G40

has passed the test of classification in accordance to:
 έχει πέρασε το τεστ της κατάταξης σύμφωνα με:

EN1935:2007

Coding System according to the Standard:
 Σύστημα κωδικοποίησης σύμφωνα με το πρότυπο:



Category of use	Durability	Door Mass	Fire Resistance	Safety	Corrosion Resistance	Security	Hinge Grade
Κατηγορία χρήσης	Αντοχή	Βάρος πόρτας	Αντίσταση στη φωτιά	Ασφάλεια	Αντίσταση στην διάβρωση	Αντικλεπτική ικανότητα	Βαθμός Μεντεσέ
4	7	6	0	1	3	0	13

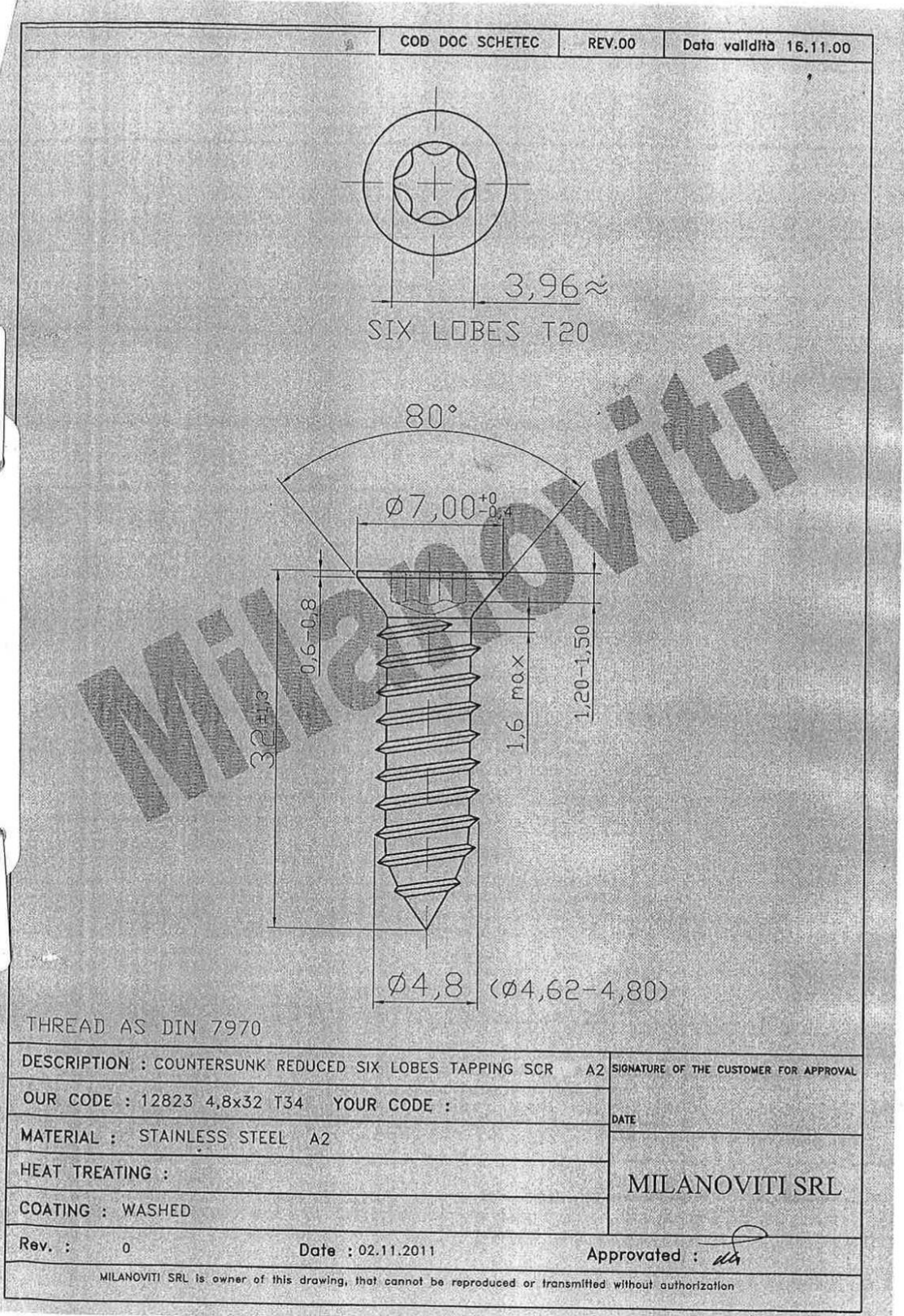
Issued date: 12/6/2024

Εκδόθηκε: 12/6/2024

The above classification was derived from laboratory tests conducted by Panidis S.A., executed in accordance with the requirements of EN1935: 2007.

Η παραπάνω ταξινόμηση προήλθε από τις εργαστηριακές δοκιμές που διεξήγαγε η Μακεδονική Πανίδης, οι οποίες εκτελέστηκαν σύμφωνα με τις προδιαγραφές του EN1935:2007.









Declaration of performance

**CONSTRUCTION PRODUCTS REGULATION 2011
DECLARATION OF PERFORMANCE**

No. DoP / SAH 002

1. Unique identification code of the product-type:
Mila ProSecure adjustable door hinge
2. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4) of the CPR:
Mila ProSecure adjustable door hinge
3. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:
Escape route doors (For other products such as exit devices)
4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required under Article 11(5):
Mila Hardware, 1 Brunel Close, Drayton Fields Industrial Estate, Daventry, Northampton, NN11 8RB
5. Where applicable, name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2):
N/A
6. System or systems of assessment and verification of constancy of performance of the construction product as set out in CPR, Annex V:
System 1
7. In case of the declaration of performance concerning a construction product covered by a harmonized standard:
EN 1935:2002
Notified testing laboratory No.1121 CoCoP certificate number 1121-CPR-AC5051
8. European Technical Assessment:
N/A

9. Declared performance

Essential characteristics	Performance	Harmonised technical specification
Self-closing Initial friction torque (door mass 60 kg) Static load Load deformation	< 3,0 Nm Passed with a displacement under load: -lateral < 2 mm -vertical < 4 mm and a residual displacement after unloading. -lateral < 0,6 mm -vertical < 0,3 mm	EN 1935:2002
Overload	Passed	
Shear strength	Passed with a lateral and vertical displacement after unloading < 3 mm	
Durability	Passed a 200 000 cycles test with a maximum wear: -lateral < 0,5 mm -vertical < 1,0 mm and with a maximum frictional torque. -after 20 cycles < 3.0 Nm -after the completion of 200 000 cycles < 3.0 Nm	
Families of hinges with common design feature	The hinge covered by this DoP is the hinge tested	



Corrosion resistance	Grade 4: 240 h	
Dangerous substances	Pass: the materials in the hinge do not contain or release any dangerous substances in excess of the maximum levels specified in existing European material standards or any national regulations (1)	

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9.

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.
Signed for and on behalf of the manufacturer by:

SA Cooke

Mr Stafford Cooke

Technical Manager of Mila Hardware LTD

20/06/2016

Mila Hardware Ltd
1 Brunel Place
Drayton Fields Industrial Estate
Daventry
NN11 8RB



The laboratory declares that the above test results refer only to the tested object.

Without the written consent of the Laboratory, the test report may only be reproduced in its entirety.
"According to the ISO-ILAC-IAF Communication (April 2017)¹ available at www.pca.gov.pl, meeting the requirements of the ISO/IEC 17025 standard by a laboratory means that the laboratory meets both the requirements in terms of technical competence and the management system which are necessary for the consistent provision of technically reliable test and calibration results (...)"

¹April 1, 2017 - amendment of the ISO-ILAC-IAF message.

Mobile Laboratorium Techniki Budowlanej Sp. z o. o.

Tests done by

Senior technician Adam Domański
Assistant technician Karol Mścichowski
Laboratory manager Adam Mścichowski

Report made by

Laboratory manager Adam Mścichowski

Report verified by

Quality manager Wioleta Strzelec

Test authorized and approved by

Laboratory manager Adam Mścichowski

end of test report

