

Notified Body number: 2018

BANDYMAI
ISO/IEC 17025

Nr. LA.01.031

TEST REPORT Nr. 085 SF/22 OVA en
15th of April 2022

Page (pages)
1 (6)

Air permeability, water tightness and resistance to wind load measurement

(designation of the test)

Test methods: LST EN 1026:2016 Windows and doors- Air permeability -Test method.
LST EN 1027:2016 Windows and doors – Water tightness -Test method.
LST EN 12211:2016 Windows and doors – Resistance to wind load - Test method.
(number of normative document)

Specimen description: External wooden door with aluminium cladding (ARKA lux Scandinavian slimline). Door size 900x2100 mm. Product frame/sash material: wooden with aluminium cladding. Filling the product sash /frame: glazed. System: ARKA lux. Type of opening: outward opening. Fittings: Mila garant. Locks / handles: Prolinea. Fastening (number of sash locking points): 3 locking points. Gaskets: main sealing gasket Schlegel / external wind gasket Stemeseder. Other details: no. Glazing: 2k 4+4LowE1.0-18SW9005. Producer and date of the glazing unit: Stiklu Centrs SIA 10.03.2022. Date of production of window: 11.04.2022.
(name, description and identification details of a specimen; information submitted by the customer)

Customer: SIA "ARKA lux", "Pori", Virgas pag., Dienvidkurzemes nov., LV-3433, Latvia
(the name and address)

Manufacturer: SIA "ARKA lux", "Pori", Virgas pag., Dienvidkurzemes nov., LV-3433, Latvia
(the name and address)

Results of test:

Name of the indicator and unit	Method reference no.	Test result
Air permeability, class	LST EN 12207:2017	4
Water tightness, class	LST EN 12208:2002	AE1200
Resistance to wind load, test pressure, class	LST EN 12210:2016	5
Resistance to wind load, frame deflection, class	LST EN 12210:2016	C
Note. 1) The testing are carried out in purpose for conformity assessment of the product according to LST EN 14351-1:2006+A2:2016; 2) Conformity of test results is evaluated using the decision rule in accordance with ILAC-G8: 09/2019 point 4.2.1.		

Place of test: Building Physics Laboratory, Institute of Architecture and Construction of Kaunas University of Technology

(name of the test laboratory)

Specimen delivery date: 12/4/2022

Date of test: 12/4/2022

Sampling: The test specimen sampled by customer. Order description: No. 085/22, 6/4/2022

Additions information: Application 6/4/2022, drawing

(other deviations, other tests and any information related to the test)

Annex: 1– Test photos, 2– Schematical view of the test rig, 3– Measurement results (+13 pages)

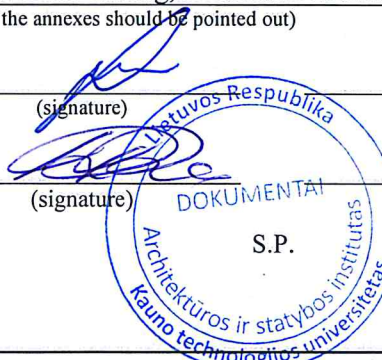
(the numbers of the annexes should be pointed out)

Technical manager:
(approving test results)

(signature) J. Ramanauskas
(n., surname)

Test performed by:
(person responsible for a test)

(signature) R. Rauckis
(n., surname)



Validity – the named data and results refer exclusively to the tested and described specimens.
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Installation of the sample

Sample has been installed into test rig KS 3035/650 PC No. P2130 opening by workers of the laboratory. An opening of the test rig was adjusted that it size would meet the dimensions of the sample.

The ambient temperature and humidity close to the specimen shall be within the range 10 °C to 30 °C and 25 % to 75 % RH and the specimen shall be conditioned thus for at least 4 h immediately before test.

Methods and equipment

Air permeability has been tested in accordance with requirements of *test method* standard.

Test rig KS 3035/650 PC includes:

1. Test wall,
2. Air flow control block,
3. Water sprinkling system,
4. Indication and control equipment,
5. Deflection sensors.

Technical data of test rig:

1. Max size of the sample should be tested: width – 2400 mm, height – 2350 mm,
2. Max developed test pressure: ± 3000 Pa,
3. Ranges of measurement: I – (0,5...50) m³/h II – (0,5...300) m³/h,
4. Range of displacement sensors ± 25 mm.

Test rig KS 3035/650 PC No. P2130 tried LEI No. 30/20-D; 31/20-D; 85/20-B; 119/20-S 2020-10-20 and MC KRL No.085981 2020-12-01

- Sources:** [1] *LST EN 1027:2016 Windows and doors – Water tightness – Test method.*
[2] *LST EN 12208:2002 Windows and doors – Water tightness - Classification.*
[3] *LST EN 1026:2016 Windows and doors- Air permeability – Test method*
[4] *LST EN 12207:2017 Windows and doors- Air permeability – Classification.*
[5] *LST EN 12211:2016 Windows and doors – Resistance to wind load – Test method.*
[6] *LST EN 12210:2016 Windows and doors – Resistance to wind load – Classification.*
[7] *LST EN 14351-1:2006+A2:2016 Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets.*

Distribution: Customer
Building Physics, Laboratory
Institute of Architecture and Construction of Kaunas
University of Technology

Original

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Designation of the product tested:

External wooden door with aluminium cladding (ARKA lux Scandinavian slimline). Door size 900x2100 mm. Product frame/sash material: wooden with aluminium cladding. Filling the product sash /frame: glazed. System: ARKA lux. Type of opening: outward opening. Fittings: Mila garant. Locks / handles: Prolinea. Fastening (number of sash locking points): 3 locking points. Gaskets: main sealing gasket Schlegel / external wind gasket Stemeseder. Other details: no. Glazing: 2k4+4LowE1.0-18SW9005. Producer and date of the glazing unit: Stiklu Centrs SIA 10.03.2022. Date of production of window: 11.04.2022.

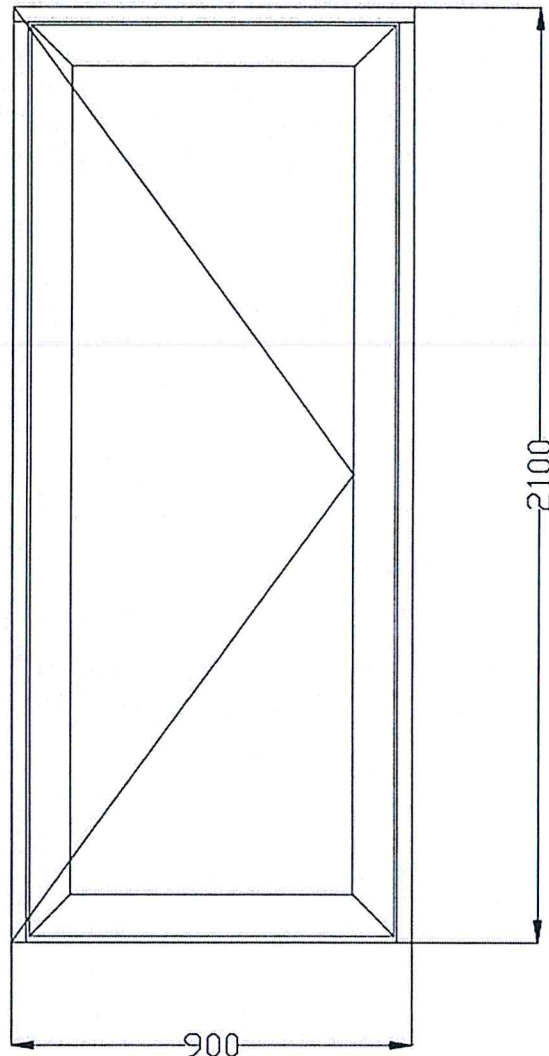


Fig.1 Drawing of the sample (information submitted by the customer)

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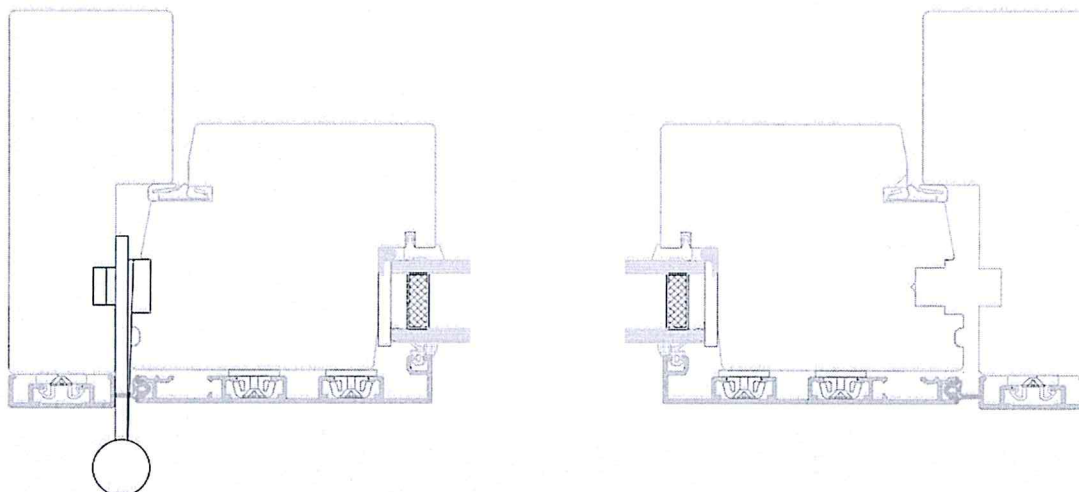


Fig.2 Drawing of the sample (information submitted by the customer)

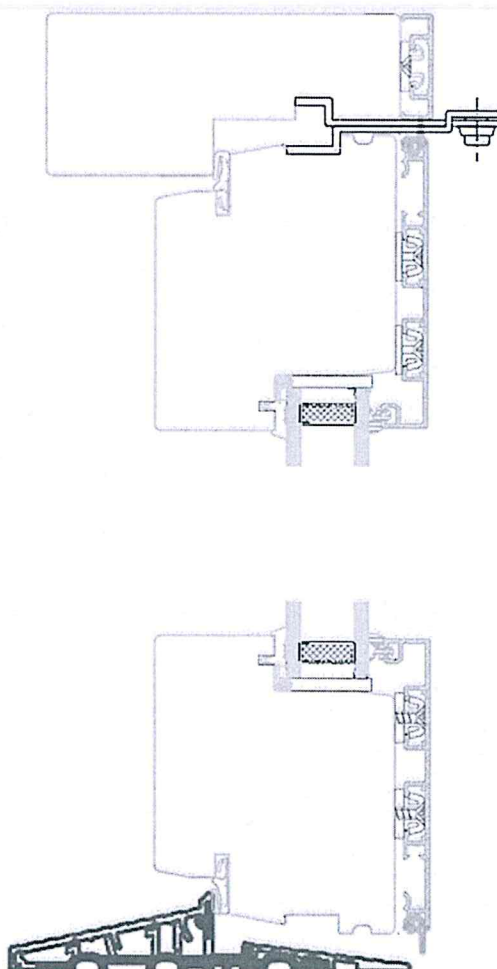


Fig.3 Drawing of the sample (information submitted by the customer)

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1 Annex. Test photos

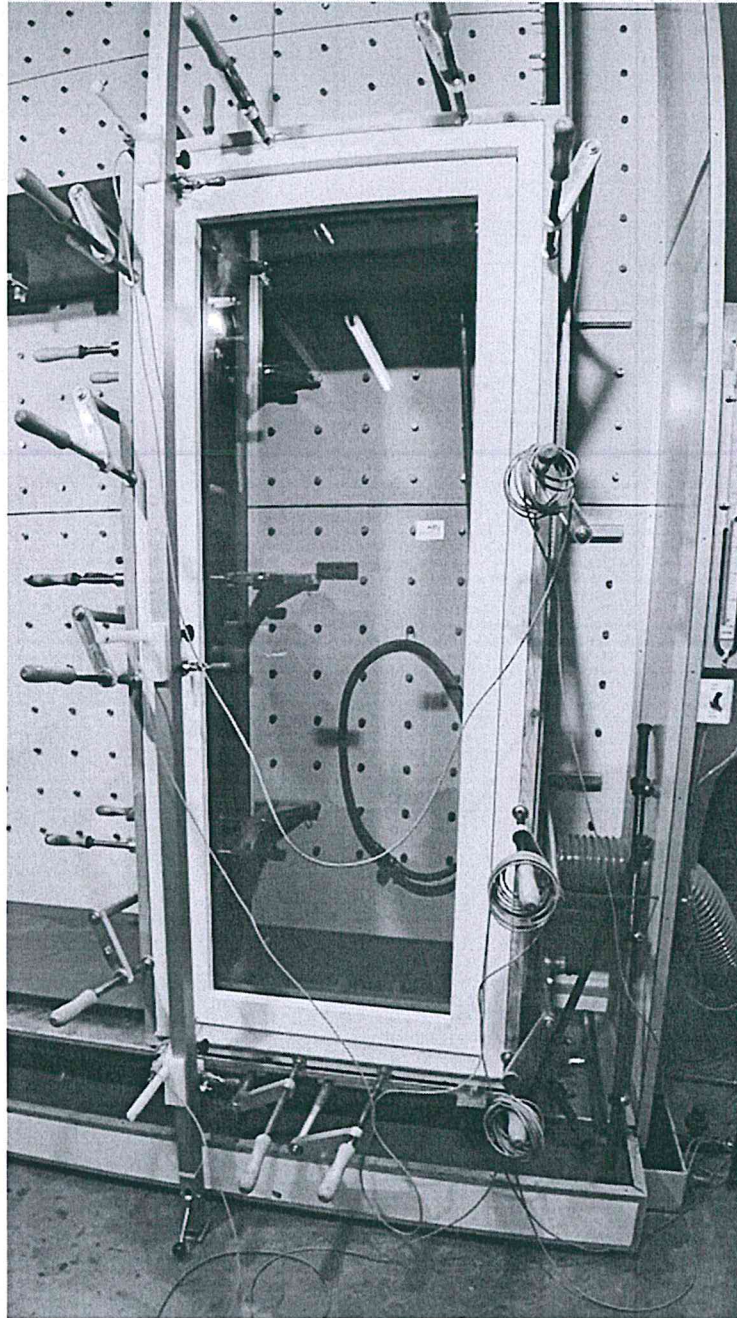


Fig 4. Photo of the sample (during the test)

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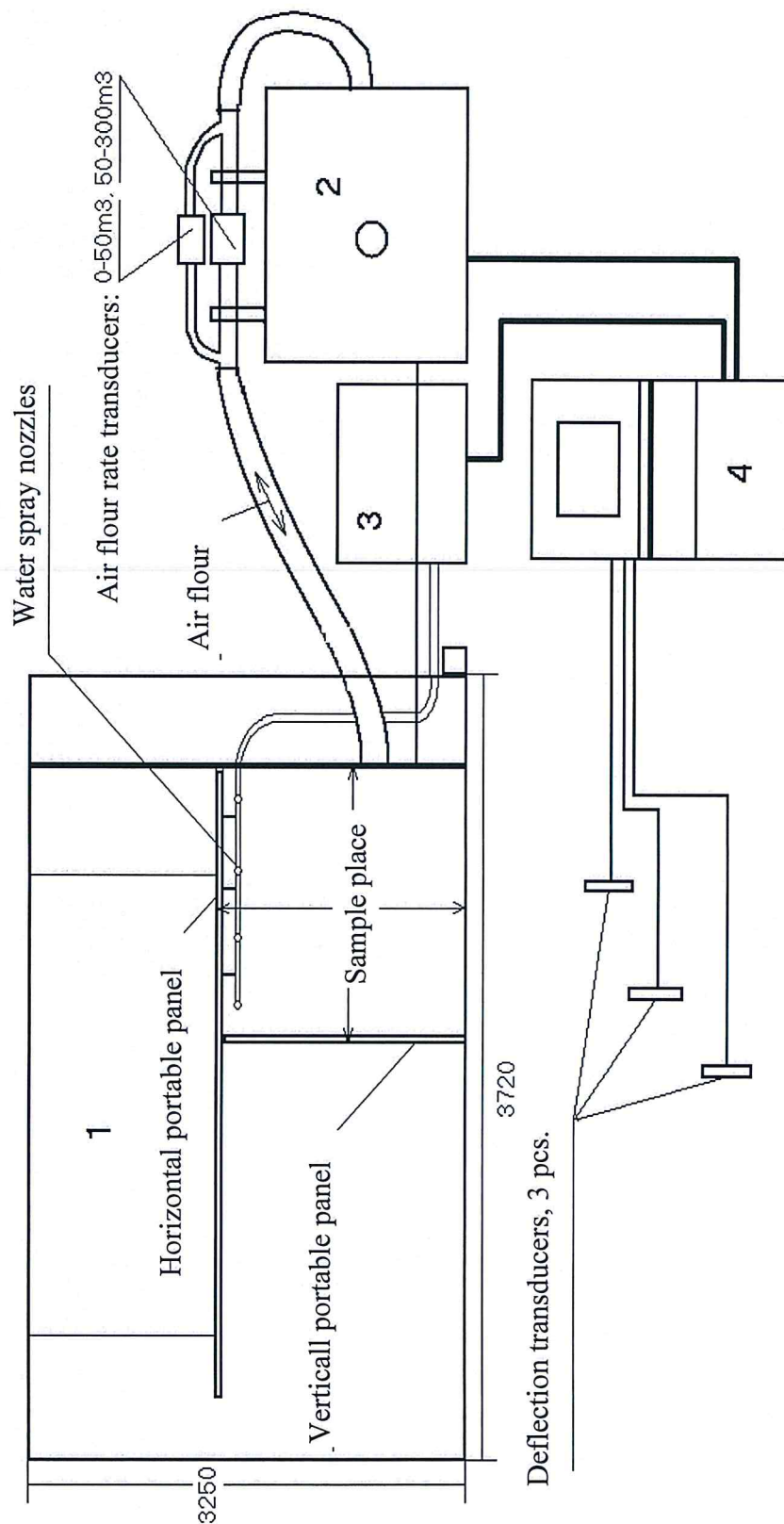


Fig 5. Scheme of test equipment for air permeability, wind load resistance and water tightness of building materials and products testing: 1 – test measurement wall, 2 – air flow control and regulation block, 3 – water spray device, 4 – indicator and control equipment

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Test protocol

KTU Architektūros ir statybos institutas
Statybinės fizikos laboratorija
Tunelio g. 60, Kaunas
Lietuva



Client : Order 289 085/22 OVA
Test number: 01
Examiner : R.Rauckis

Date: 04.04.2022

Carried out tests:

- 1.) Air Permeability: EN 12207 in accordance with BS EN 1026
- 2.) Watertightness: EN 12208
- 3.) Wind Resistance: EN 12210
- 4.) Air Permeability: EN 12207 in accordance with BS EN 1026
- 5.) Safety test

Bandinio charakteristikos

Bandinio tipas : Duryš

Varstymo tipas : atidaromas i isore

Measurement of the element (W x H) : 0.900 x 2.100 m Area : 1.890 m²

Measurements of the sash (W x H) : 0.785 x 2.010 m Area : 1.577 m²

Seal length : 5.590 m

Profilio duomenys

Remas :	Stikl. paketo skirtukas :
Varcia :	Skersinis remas :
Remo elementai :	Stiklajuostes :
Sandarinimas :	Drenazinis kanalas :
Tech. iranga :	Kita :
Medziagiskumas :	Uzraktas :
Apdaila :	Vyriai :

Istiklinimas

Tipas :	Uzpildas :
Uzpildas :	Stiklo plotas :
Stiklo matmenys :	Kitas :

Classification

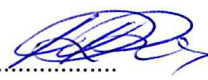
Air permeability EN 12207	Target Class 4	Actual Class 4
Water tightness EN 12208	Target Class AE1200	Actual Class AE1200
Wind resistance EN 12210	Target Class 5C	Actual Class 5C

Temperature: 24 Celsius Humidity: 29 Air pressure: 1010.1 hPa

Remark:

Place:.....

Date:04.04.2022

Tester:.....

Test protocol

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Air Permeability: EN 12207 in accordance with BS EN 1026

Window surface: 1.890 m² Seal length: 5.590 m

1. Air Permeability pressure / Air Permeability suction

3 Pressure bump 644 Pa durchgeführt
3 Pressure bump -655 Pa durchgeführt

Pressure Pa Nominal	Real	Qc m ³ /h	Qtc m ³ /h	Window surface m ³ /h/m ²	surface class	Joints length m ³ /h/m	length class
+							
50	50	0.00	0.05	0.02	4	0.00	4
100	99	0.00	0.57	0.30	4	0.10	4
150	150	0.00	0.99	0.52	4	0.17	4
200	199	0.00	1.29	0.68	4	0.23	4
250	249	0.00	1.56	0.82	4	0.27	4
300	300	0.00	1.74	0.92	4	0.31	4
450	450	0.00	2.36	1.25	4	0.42	4
600	599	0.00	2.86	1.51	4	0.51	4
-							
-50	-50	0.00	0.00	0.00	4	0.00	4
-100	-100	0.00	0.62	0.32	4	0.11	4
-150	-150	0.00	1.17	0.62	4	0.21	4
-200	-200	0.00	1.57	0.83	4	0.28	4
-250	-249	0.00	1.91	1.01	4	0.34	4
-300	-298	0.00	2.28	1.20	4	0.40	4
-450	-450	0.00	3.42	1.81	4	0.61	4
-600	-602	0.00	4.51	2.38	4	0.80	4
Average							
50	50	0.00	0.02	0.01	4	0.00	4
100	99	0.00	0.59	0.31	4	0.10	4
150	150	0.00	1.08	0.57	4	0.19	4
200	199	0.00	1.43	0.75	4	0.25	4
250	249	0.00	1.73	0.92	4	0.31	4
300	299	0.00	2.01	1.06	4	0.36	4
450	450	0.00	2.89	1.53	4	0.51	4
600	600	0.00	3.68	1.95	4	0.65	4

Pressure: 4 Suction: 4 Average value: 4

2. Air Permeability pressure / Air Permeability suction

0 Pressure bump 0 Pa durchgeführt
0 Pressure bump 0 Pa durchgeführt

Pressure Pa Nominal	Real	Qc m ³ /h	Qtc m ³ /h	Window surface m ³ /h/m ²	surface class	Joints length m ³ /h/m	length class
+							
50	49	0.00	0.22	0.11	4	0.03	4
100	99	0.00	0.66	0.34	4	0.11	4
150	149	0.00	1.00	0.53	4	0.18	4
200	199	0.00	1.22	0.64	4	0.21	4
250	250	0.00	1.49	0.79	4	0.26	4
300	299	0.00	1.62	0.85	4	0.29	4
450	446	0.00	2.01	1.06	4	0.35	4
600	600	0.00	2.52	1.33	4	0.45	4
-							
-50	-50	0.00	0.00	0.00	4	0.00	4
-100	-100	0.00	0.53	0.28	4	0.09	4
-150	-151	0.00	1.14	0.60	4	0.20	4
-200	-199	0.00	1.62	0.85	4	0.29	4

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2. Air Permeability pressure / Air Permeability suction

Pressure Pa		Qc m ³ /h	Qtc m ³ /h	Window surface		Joints length	
Nominal	Real			m ³ /h/m ³	class	m ³ /h/m	class
-250	-250	0.00	2.08	1.10	4	0.37	4
-300	-299	0.00	2.57	1.36	4	0.46	4
-450	-450	0.00	4.57	2.42	4	0.81	4
-600	-597	0.00	7.00	3.70	4	1.25	4
Average							
50	49	0.00	0.11	0.05	4	0.01	4
100	99	0.00	0.59	0.31	4	0.10	4
150	150	0.00	1.07	0.56	4	0.19	4
200	199	0.00	1.42	0.75	4	0.25	4
250	250	0.00	1.78	0.94	4	0.32	4
300	299	0.00	2.10	1.11	4	0.37	4
450	448	0.00	3.29	1.74	4	0.58	4
600	598	0.00	4.76	2.52	4	0.85	4

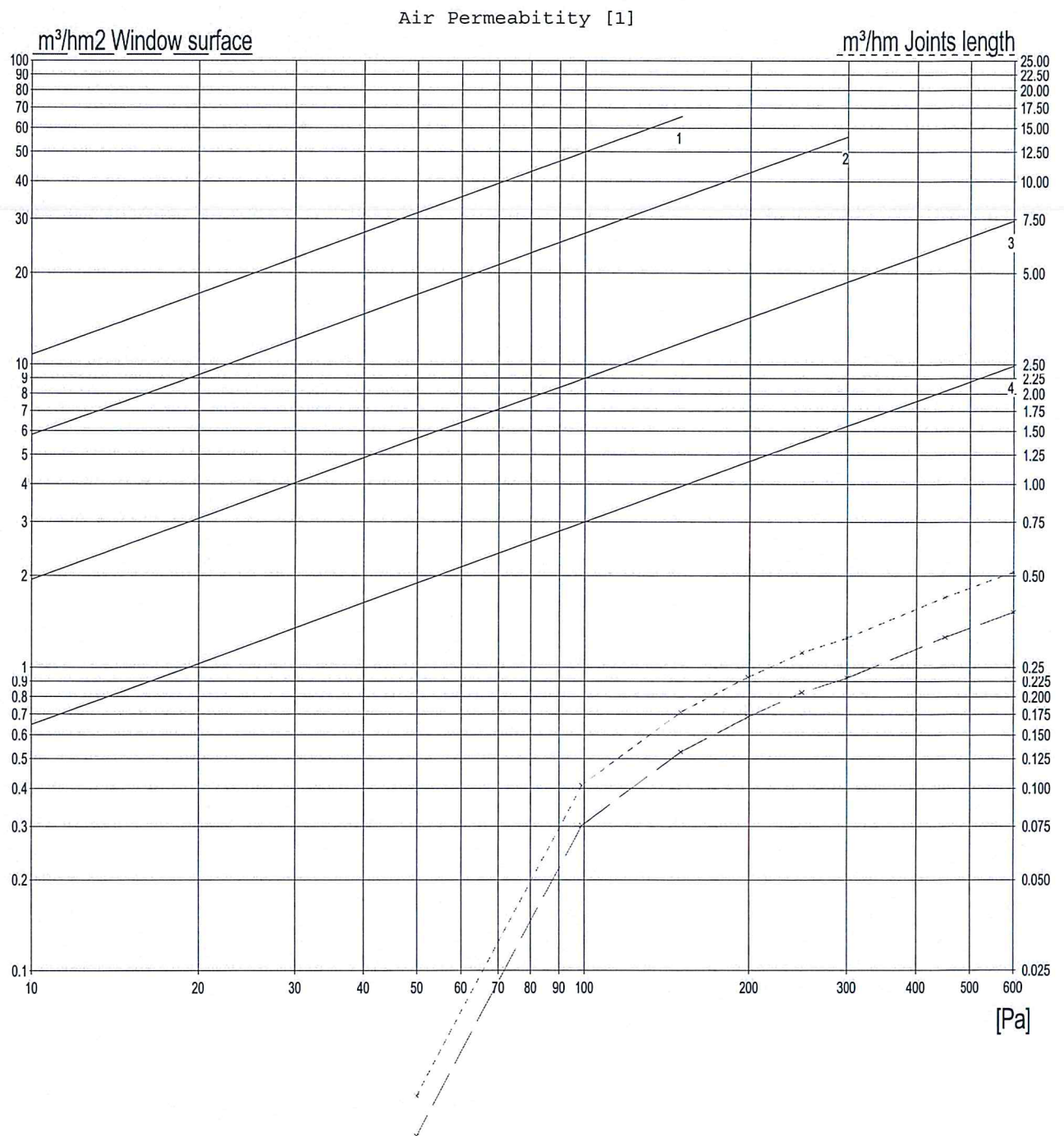
Pressure: 4 Suction: 4 Average value: 4

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Air Permeability pressure:

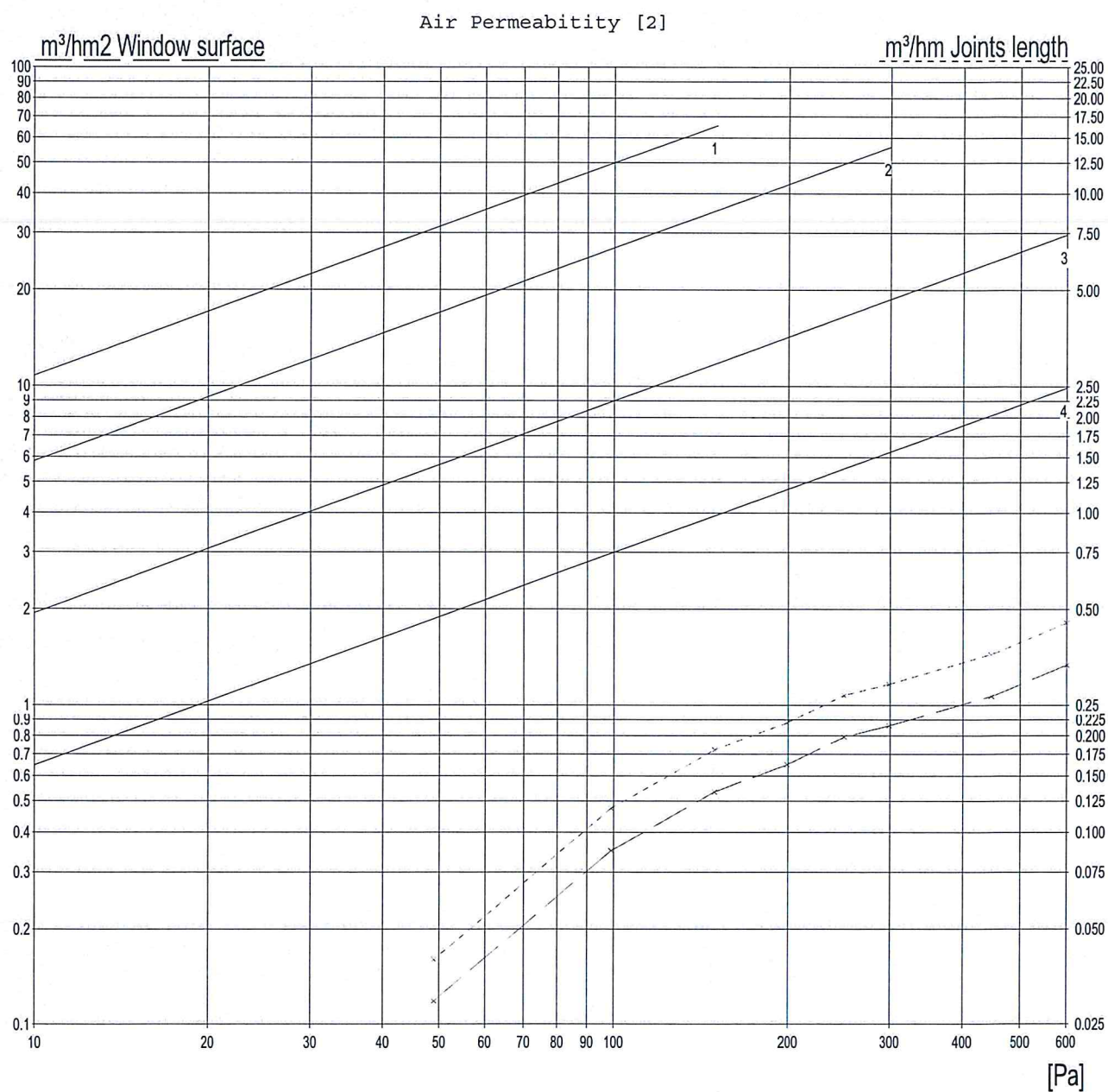


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Air Permeability pressure:

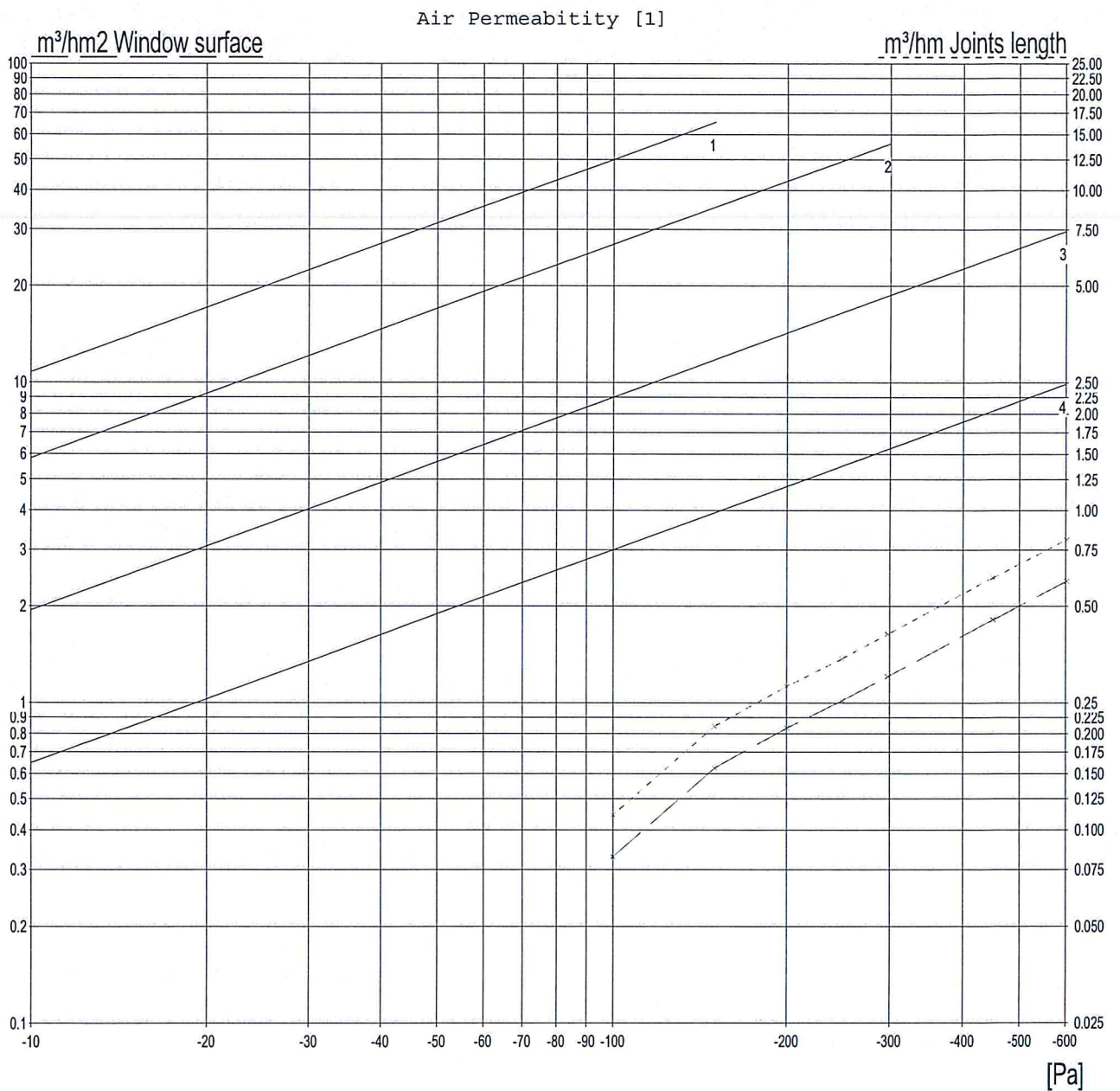


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Air Permeability suction:

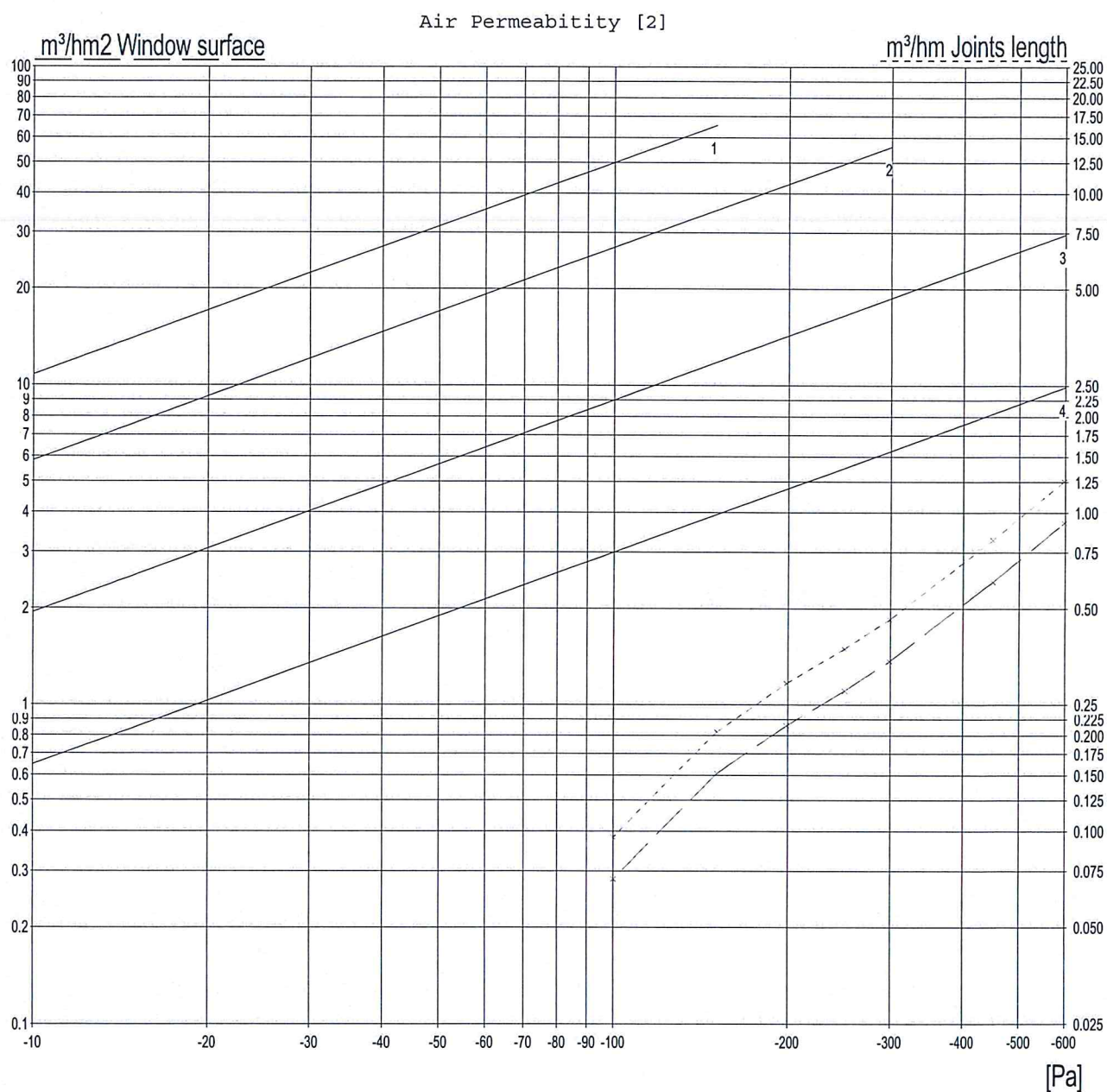


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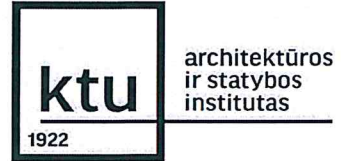


Air Permeability suction:

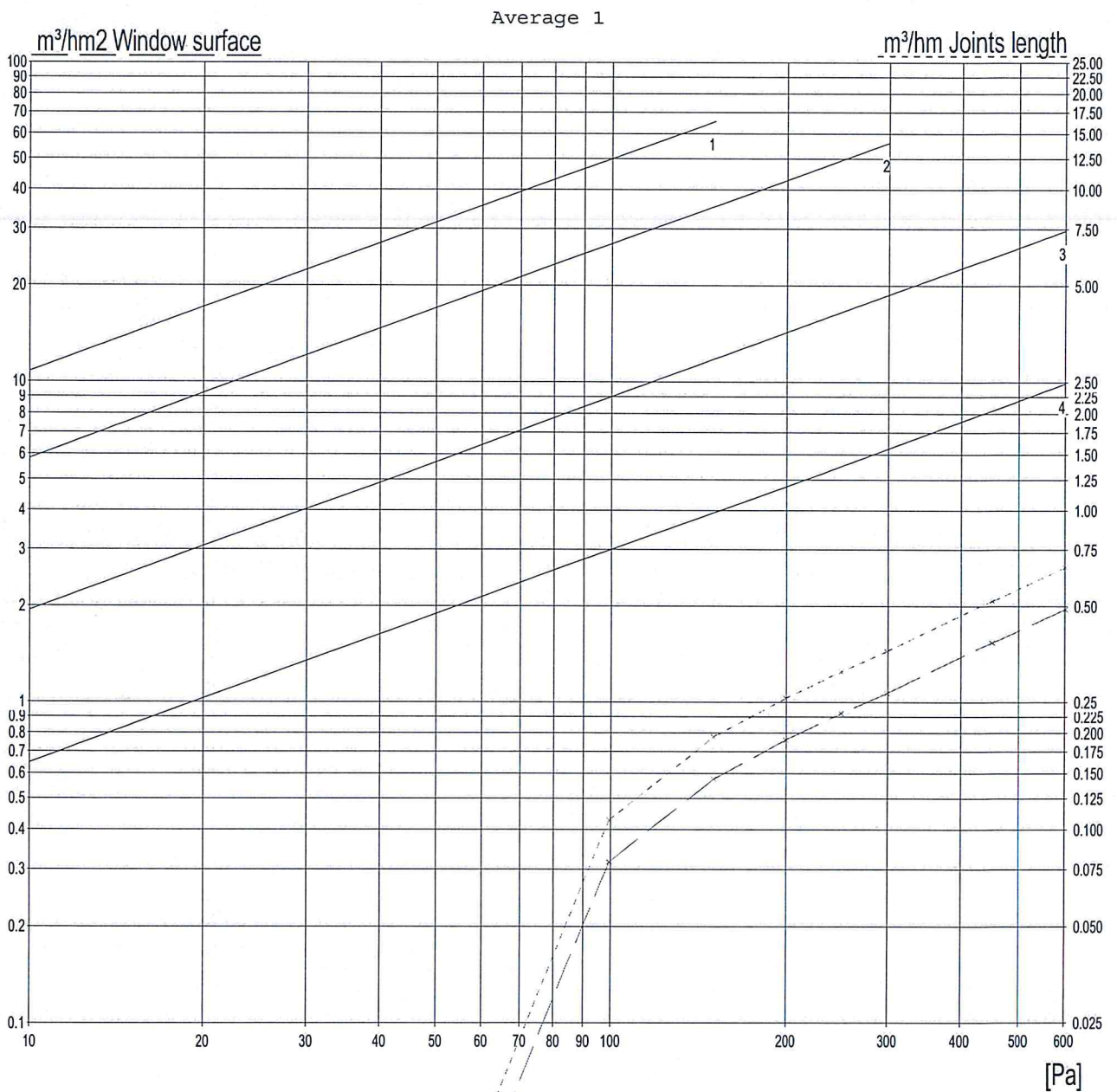


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Air Permeability Average:

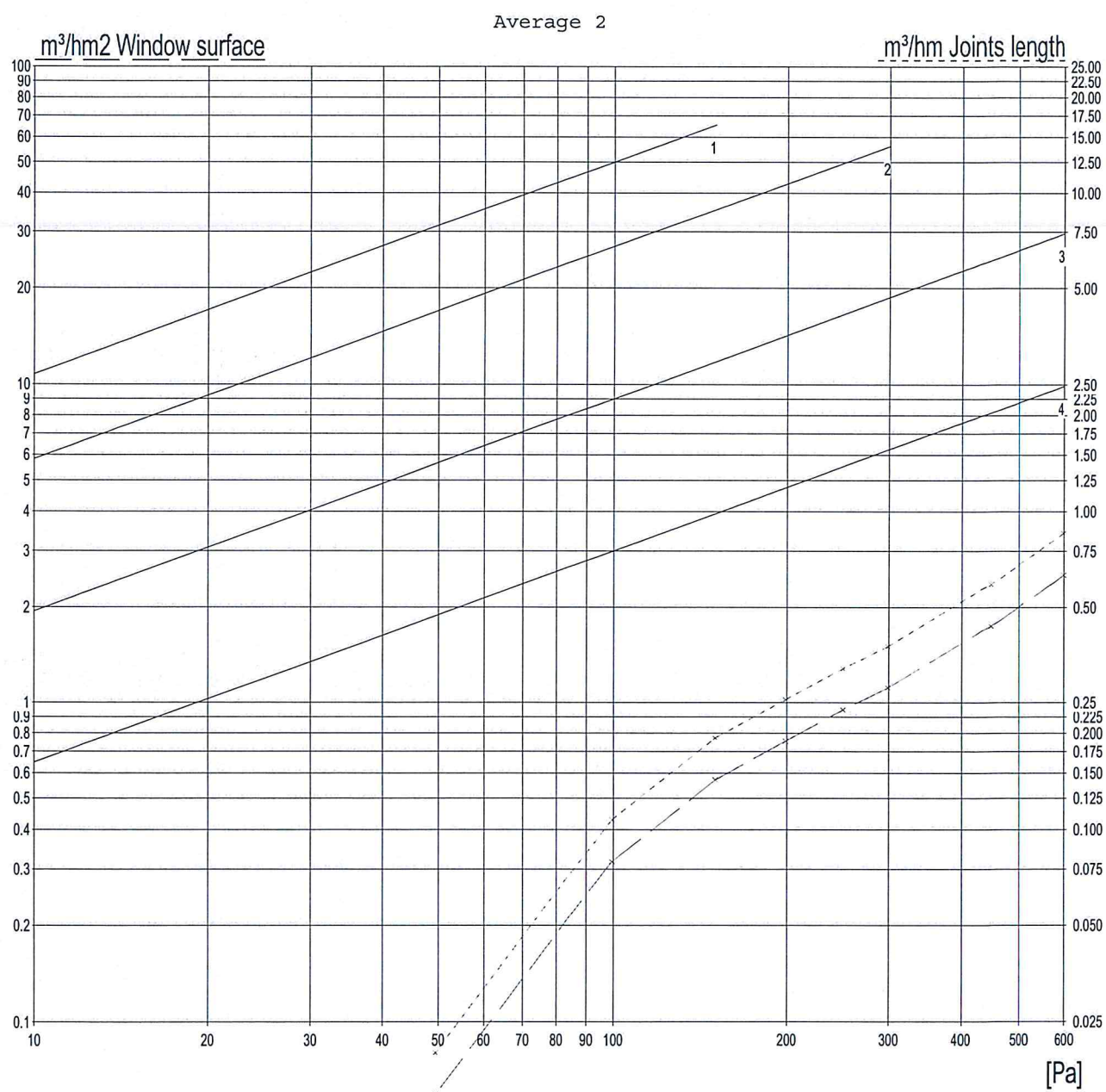


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Air Permeability Average:



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Watertightness: EN 12208 -

Spaying method A Number of nozzles: 3 Vol. Water: 360.0 litre/hour
Spaying angle: 24 Degree : 6.0 litre/minute
Add. spraying pipe Number of nozzles: 0 Vol. Water: 0.0 litre/hour
(0.0 litre/nozzle) : 0.0 litre/minute

1. Watertightness pressure

Pressure Pa		Time	Remark
Nominal	Real		
0	0	00:15:00	OK
50	50	00:05:00	OK
100	101	00:05:00	OK
150	150	00:05:00	OK
200	201	00:05:00	OK
250	250	00:05:00	OK
300	299	00:05:00	OK
450	452	00:05:00	OK
600	602	00:05:00	OK
750	755	00:05:00	OK
900	903	00:05:00	OK
1050	1057	00:05:00	OK
1200	1205	00:05:00	OK

Watertightness Class: AE1200

Point of water ingress :

Probable cause of leakage :

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Wind Resistance: EN 12210

Temperature: 24 Celsius Humidity: 29 % Air pressure: 1010.1 HPa

Wind Resistance: EN 12210		
P1 for deflection	2000	-2000
P2 for cycles	-1000	1000
P3 for safety test	-3000	3000

Deflection:

Distance between the way transducers

a01 <-> c03 = 1980 mm

A = 1/150 B = 1/200 C = 1/300

Wind Resistance P1 pressure

3 Pressure pulses 2200 Pa implemented

Pressure		Distortion			Distortion	Distortion
Desired	Actual	Absolute			Relative	class
2000	2004	a01= -2.31	b02= -2.94	c03= -2.17	f01= -0.70	C (1/>999)
0	0	a01= 0.02	b02= 0.02	c03= 0.02	f01= 0.00	

Class: 5

Wind Resistance P1 suction

3 Pressure pulses -2200 Pa implemented

Pressure		Distortion			Distortion	Distortion
Desired	Actual	Absolute			Relative	class
-2000	-2012	a01= 1.54	b02= 2.34	c03= 1.77	f01= 0.68	C (1/>999)
0	0	a01= 0.07	b02= 0.05	c03= 0.07	f01= -0.02	

Class: 5

Pressure pulses

50 Cycles -1000 Pa / 1000 Pa implemented

Remark :

Class: 5C

Test protocol

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Safety test

P3 = Pa Des/Est: -3000 / -3082 : 0 / -15

Remark Suction :

P3 = Pa Des/Est: 3000 / 3032 : 0 / -15

Remark Pressure :

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Window sketch:

Dimensions (W x H) : 0.900 m x 2.100 m
Joints length: 5.590 m
Window surface: 1.890 m²
Sash surface: 1.577 m²

