

Notified Body number: 2018

RANDYMAT  
ISO/IEC 17025

Nr. LA.01.031

**TEST REPORT Nr. 088 SF/21 OVA en**  
**7<sup>th</sup> of July 2021**

Page (pages)  
1 (5)

**Window 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.  
LST EN 1027:2016 Windows and doors – Water tightness.  
LST EN 12211:2016 Windows and doors – Resistance to wind load.

(number of normative document)

Specimen description: PVC window 2000-1700 (Plafen). Dimensions: width 1700mm, height 2000mm. Frame and sash material: PVC. Filling the product sash/frame: PVC+metal. System: Plafen T-line 70 mm (5 camera). Type of opening: inward, right. Fittings: Vorne. Locks/handles: VHS. Threshold: -. Fixation. 7 places. Gasket: 2. Glazing: 24mm, 4LowE+16+4CF. Other details: drainage 10 mm. Producer and date of the glazing unit: First Glass Company SIA 17.06.2021. Date of production of window: 18.06.2021.

(name, description and identification details of a specimen; information submitted by the customer)

Customer: SIA Baltic Fenster, Ilūkstes iela 32-43, Riga, Latvia  
(the name and address)

Manufacturer: SIA Baltic Fenster, Austuve siela 1A, Riga, 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    | <b>4</b>    |
| Water tightness, class                                                                                                                                                                                                                                           | LST EN 12208:2002    | <b>6A</b>   |
| Resistance to wind load, test pressure, class                                                                                                                                                                                                                    | LST EN 12210:2016    | <b>3</b>    |
| Resistance to wind load, frame deflection, class                                                                                                                                                                                                                 | LST EN 12210:2016    | <b>C</b>    |
| <b>Note.</b> 1) The testing are carried out in purpose for conformity assessment of the product according to LST EN 14351-1:2006+A2:2016;<br>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: Laboratory of Building Physics, Institute of Architecture and Construction of Kaunas University of Technology

(name of the test laboratory)

Specimen delivery date: 21.06.2021 Date of test: 22.06.2021

Sampling: The test specimen sampled by customer. Order description: No. 088/20, 21.06.2021

Additions information: Application 20.04.2021, 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 (+6 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 Nr. 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:  $\pm 3000$  Pa,
3. Ranges of measurement: I – (0,5...50) m<sup>3</sup>/h II – (0,5...300) m<sup>3</sup>/h,
4. Range of displacement sensors  $\pm 25$  mm.

Test rig KS 3035/650 PC Nr.P2130 tried LEI Nr. 30/20-D; 31/20-D; 85/20-B; 119/20-S 2020-10-20 ir MC KRL Nr.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 14351-1:2006+A2:2016 Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets.*

**Distribution:** Customer

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

Original

Copy

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### Designation of the product tested:

PVC window 2000-1700 (Plafen). Dimensions: width 1700mm, height 2000mm. Frame and sash material: PVC. Filling the product sash/frame: PVC+metal. System: Plafen T-line 70 mm (5 camera). Type of opening: inward, right. Fittings: Vorne. Locks/handles: VHS. Threshold: -. Fixation. 7 places. Gasket: 2. Glazing: 24mm, 4LowE+16+4CF. Other details: drainage 10 mm. Producer and date of the glazing unit: First Glass Company SIA 17.06.2021. Date of production of window: 18.06.2021.

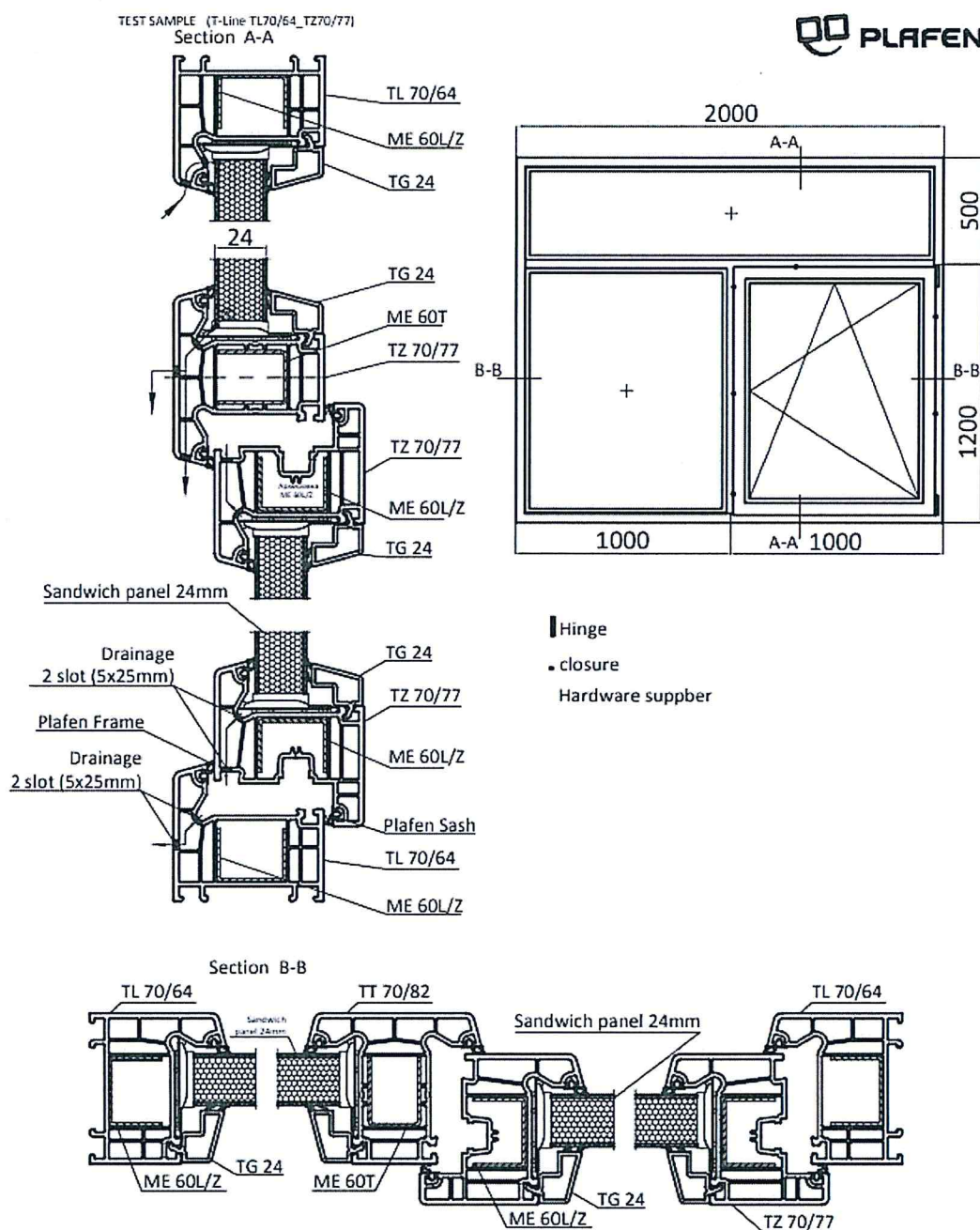
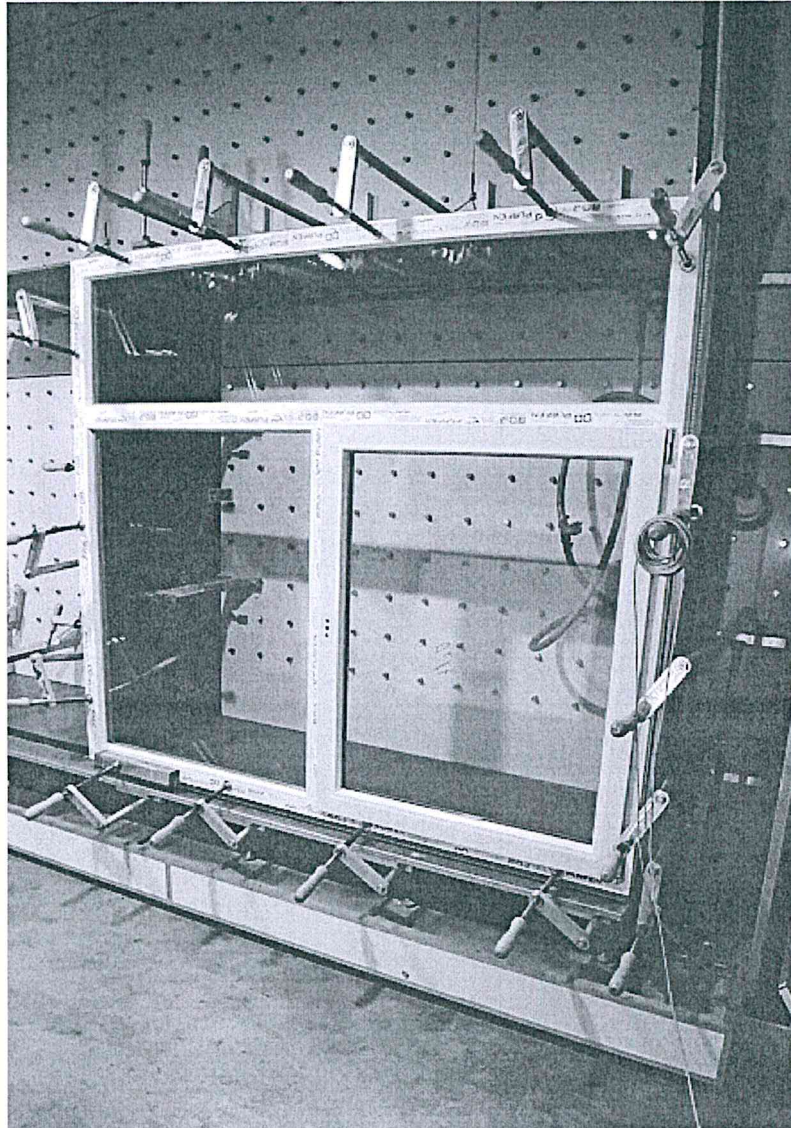


Fig.1 Drawing of the window (information submitted by the customer)

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1 Annex. Test photos



*Fig 2. Photo of the window (when was testing)*

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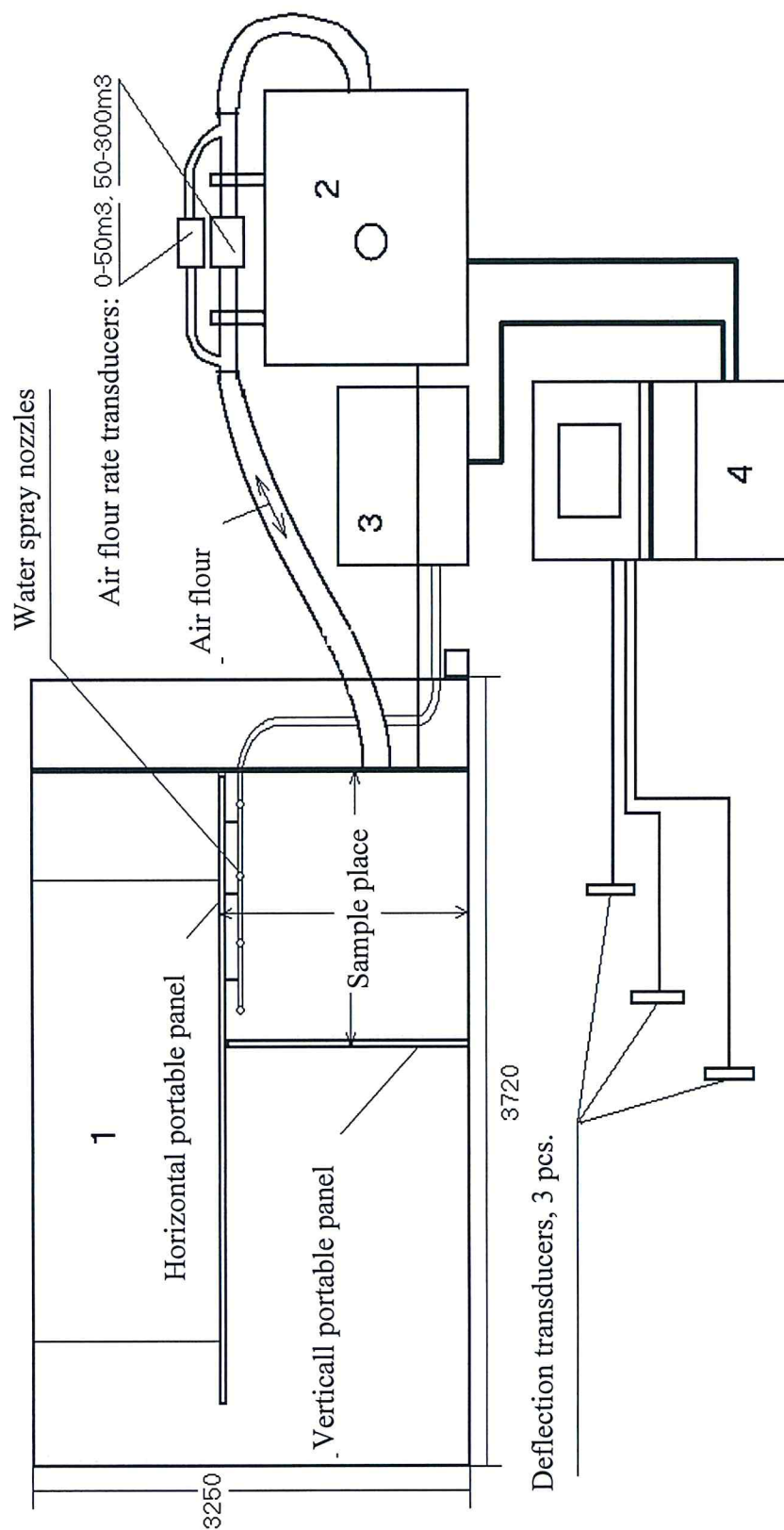


Fig 1. Equipment for window, door, roof window, industrial door and screen wall air permeability, rain water resistance and resistance to wind load measurements scheme: 1 – test measurement wall, 2 – air flow control and regulation block, 3 – water spray device, 4 – indicator and control equipment

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**Statybinės fizikos laboratorija**  
**Tunelio g. 60, Kaunas**  
**Lietuva**



Client : Order 237 088/21 OVA  
Test number: 01  
Examiner : R.Rauckis

Date: 22.06.2021

## **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 : Langu

Varstymo tipas : atidaromas i vidu

Measurement of the element (W x H) : 2.000 x 1.700 m Area : 3.400 m<sup>2</sup>

Measurements of the sash (W x H) : 0.950 x 1.150 m Area : 1.092 m<sup>2</sup>

Seal length : 4.200 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 A6 | Actual Class A6 |
| Wind resistance EN 12210  | Target Class 3C | Actual Class 3C |

Temperature: 27 Celsius Humidity: 56 Air pressure: 1001.9 HPa

Remark:

Place:.....

Date:22.06.2021

Tester:.....

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## Air Permeability: EN 12207 in accordance with BS EN 1026

Window surface: 3.400 m<sup>2</sup> Seal length: 4.200 m

### 1. Air Permeability pressure / Air Permeability suction

3 Pressure bump 653 Pa durchgeführt  
3 Pressure bump -670 Pa durchgeführt

| Pressure Pa |      | Qc<br>m³/h | Qtc<br>m³/h | Window surface |       | Joints length |       |
|-------------|------|------------|-------------|----------------|-------|---------------|-------|
| Nominal     | Real |            |             | m³/h/m³        | class | m³/h/m        | class |
| +           |      |            |             |                |       |               |       |
| 50          | 49   | 0.00       | 3.76        | 1.10           | 4     | 0.89          | 3     |
| 100         | 100  | 0.00       | 6.14        | 1.80           | 4     | 1.46          | 3     |
| 150         | 150  | 0.00       | 8.13        | 2.39           | 4     | 1.93          | 3     |
| 200         | 200  | 0.00       | 9.85        | 2.89           | 4     | 2.34          | 3     |
| 250         | 249  | 0.00       | 11.40       | 3.35           | 4     | 2.71          | 3     |
| 300         | 300  | 0.00       | 12.89       | 3.79           | 4     | 3.07          | 3     |
| 450         | 449  | 0.00       | 17.50       | 5.14           | 4     | 4.16          | 3     |
| 600         | 598  | 0.00       | 23.96       | 7.04           | 4     | 5.70          | 3     |
| -           |      |            |             |                |       |               |       |
| -50         | -50  | 0.00       | 3.81        | 1.12           | 4     | 0.90          | 3     |
| -100        | -100 | 0.00       | 6.29        | 1.85           | 4     | 1.49          | 3     |
| -150        | -150 | 0.00       | 8.49        | 2.49           | 4     | 2.02          | 3     |
| -200        | -200 | 0.00       | 10.41       | 3.06           | 4     | 2.47          | 3     |
| -250        | -250 | 0.00       | 12.35       | 3.63           | 4     | 2.94          | 3     |
| -300        | -299 | 0.00       | 14.06       | 4.13           | 4     | 3.34          | 3     |
| -450        | -451 | 0.00       | 19.36       | 5.69           | 4     | 4.61          | 3     |
| -600        | -604 | 0.00       | 24.30       | 7.14           | 4     | 5.78          | 3     |
| Average     |      |            |             |                |       |               |       |
| 50          | 49   | 0.00       | 3.78        | 1.11           | 4     | 0.90          | 3     |
| 100         | 100  | 0.00       | 6.22        | 1.82           | 4     | 1.48          | 3     |
| 150         | 150  | 0.00       | 8.31        | 2.44           | 4     | 1.97          | 3     |
| 200         | 200  | 0.00       | 10.13       | 2.98           | 4     | 2.41          | 3     |
| 250         | 249  | 0.00       | 11.87       | 3.49           | 4     | 2.82          | 3     |
| 300         | 299  | 0.00       | 13.48       | 3.96           | 4     | 3.20          | 3     |
| 450         | 450  | 0.00       | 18.43       | 5.42           | 4     | 4.38          | 3     |
| 600         | 601  | 0.00       | 24.13       | 7.09           | 4     | 5.74          | 3     |

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 |      | Qc<br>m³/h | Qtc<br>m³/h | Window surface |       | Joints length |       |
|-------------|------|------------|-------------|----------------|-------|---------------|-------|
| Nominal     | Real |            |             | m³/h/m³        | class | m³/h/m        | class |
| +           |      |            |             |                |       |               |       |
| 50          | 49   | 0.00       | 2.07        | 0.61           | 4     | 0.49          | 3     |
| 100         | 99   | 0.00       | 3.36        | 0.99           | 4     | 0.80          | 3     |
| 150         | 149  | 0.00       | 4.46        | 1.31           | 4     | 1.06          | 3     |
| 200         | 199  | 0.00       | 5.51        | 1.62           | 4     | 1.31          | 3     |
| 250         | 250  | 0.00       | 6.70        | 1.97           | 4     | 1.59          | 3     |
| 300         | 300  | 0.00       | 7.87        | 2.31           | 4     | 1.87          | 3     |
| 450         | 448  | 0.00       | 11.95       | 3.51           | 4     | 2.84          | 3     |
| 600         | 597  | 0.00       | 18.43       | 5.42           | 4     | 4.38          | 3     |
| -           |      |            |             |                |       |               |       |
| -50         | -50  | 0.00       | 2.11        | 0.62           | 4     | 0.50          | 3     |
| -100        | -100 | 0.00       | 3.38        | 0.99           | 4     | 0.80          | 3     |
| -150        | -149 | 0.00       | 4.42        | 1.30           | 4     | 1.05          | 3     |
| -200        | -200 | 0.00       | 5.29        | 1.55           | 4     | 1.26          | 3     |

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## 2. Air Permeability pressure / Air Permeability suction

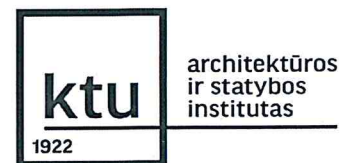
| Pressure Pa<br>Nominal | Real | Qc<br>m <sup>3</sup> /h | Qtc<br>m <sup>3</sup> /h | Window surface<br>m <sup>3</sup> /h/m <sup>2</sup> | class | Joints length<br>m <sup>3</sup> /h/m | class |
|------------------------|------|-------------------------|--------------------------|----------------------------------------------------|-------|--------------------------------------|-------|
| -250                   | -250 | 0.00                    | 6.05                     | 1.77                                               | 4     | 1.44                                 | 3     |
| -300                   | -300 | 0.00                    | 6.67                     | 1.96                                               | 4     | 1.58                                 | 3     |
| -450                   | -452 | 0.00                    | 8.59                     | 2.52                                               | 4     | 2.04                                 | 4     |
| -600                   | -603 | 0.00                    | 10.27                    | 3.02                                               | 4     | 2.44                                 | 4     |
| Average                |      |                         |                          |                                                    |       |                                      |       |
| 50                     | 49   | 0.00                    | 2.09                     | 0.61                                               | 4     | 0.49                                 | 3     |
| 100                    | 99   | 0.00                    | 3.37                     | 0.99                                               | 4     | 0.80                                 | 3     |
| 150                    | 149  | 0.00                    | 4.44                     | 1.30                                               | 4     | 1.05                                 | 3     |
| 200                    | 199  | 0.00                    | 5.40                     | 1.59                                               | 4     | 1.28                                 | 3     |
| 250                    | 250  | 0.00                    | 6.37                     | 1.87                                               | 4     | 1.51                                 | 3     |
| 300                    | 300  | 0.00                    | 7.27                     | 2.13                                               | 4     | 1.73                                 | 3     |
| 450                    | 450  | 0.00                    | 10.27                    | 3.02                                               | 4     | 2.44                                 | 3     |
| 600                    | 600  | 0.00                    | 14.35                    | 4.22                                               | 4     | 3.41                                 | 3     |

Pressure: 4      Suction: 4      Average value: 4

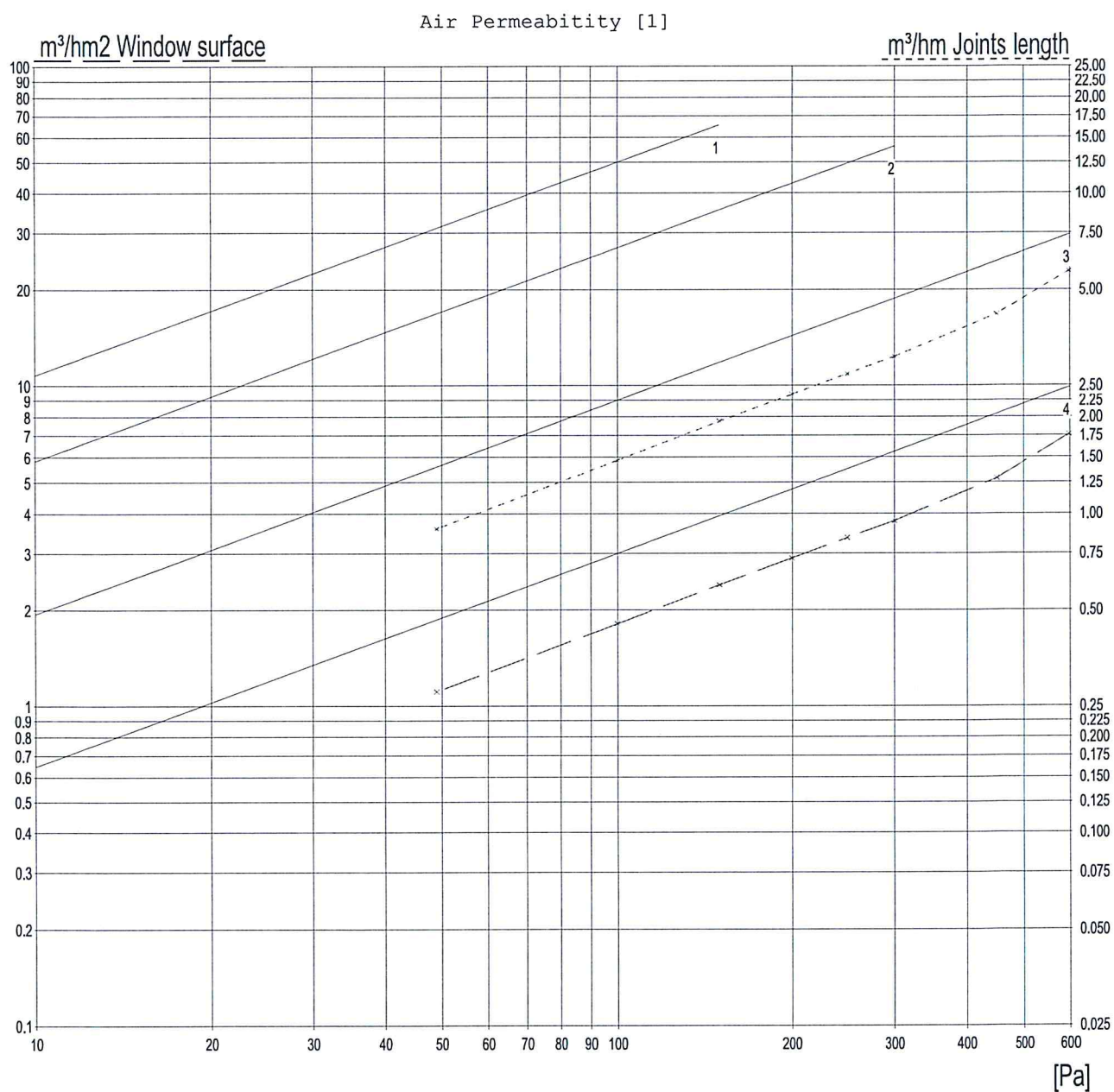


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Air Permeability pressure:

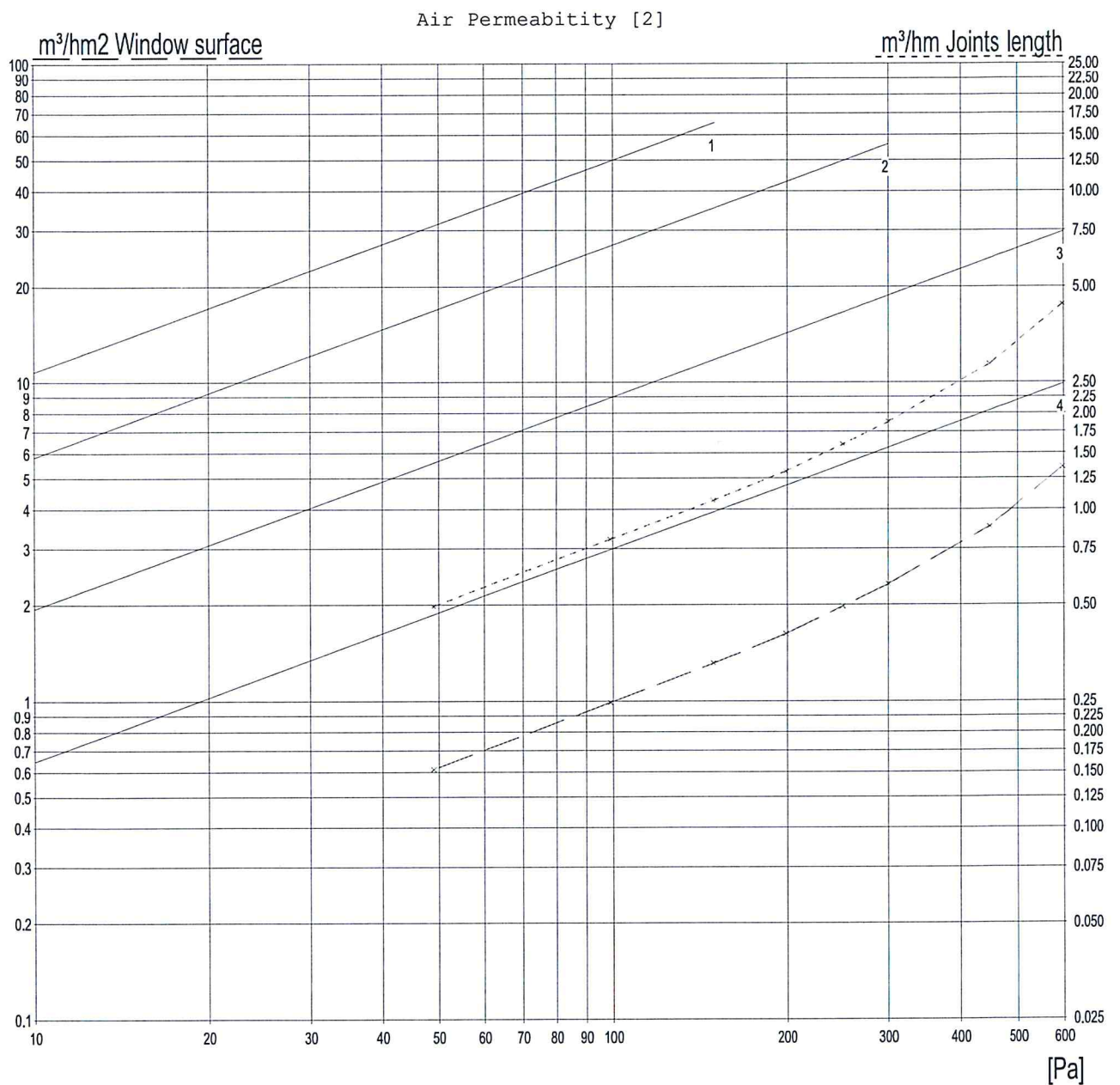


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Air Permeability pressure:

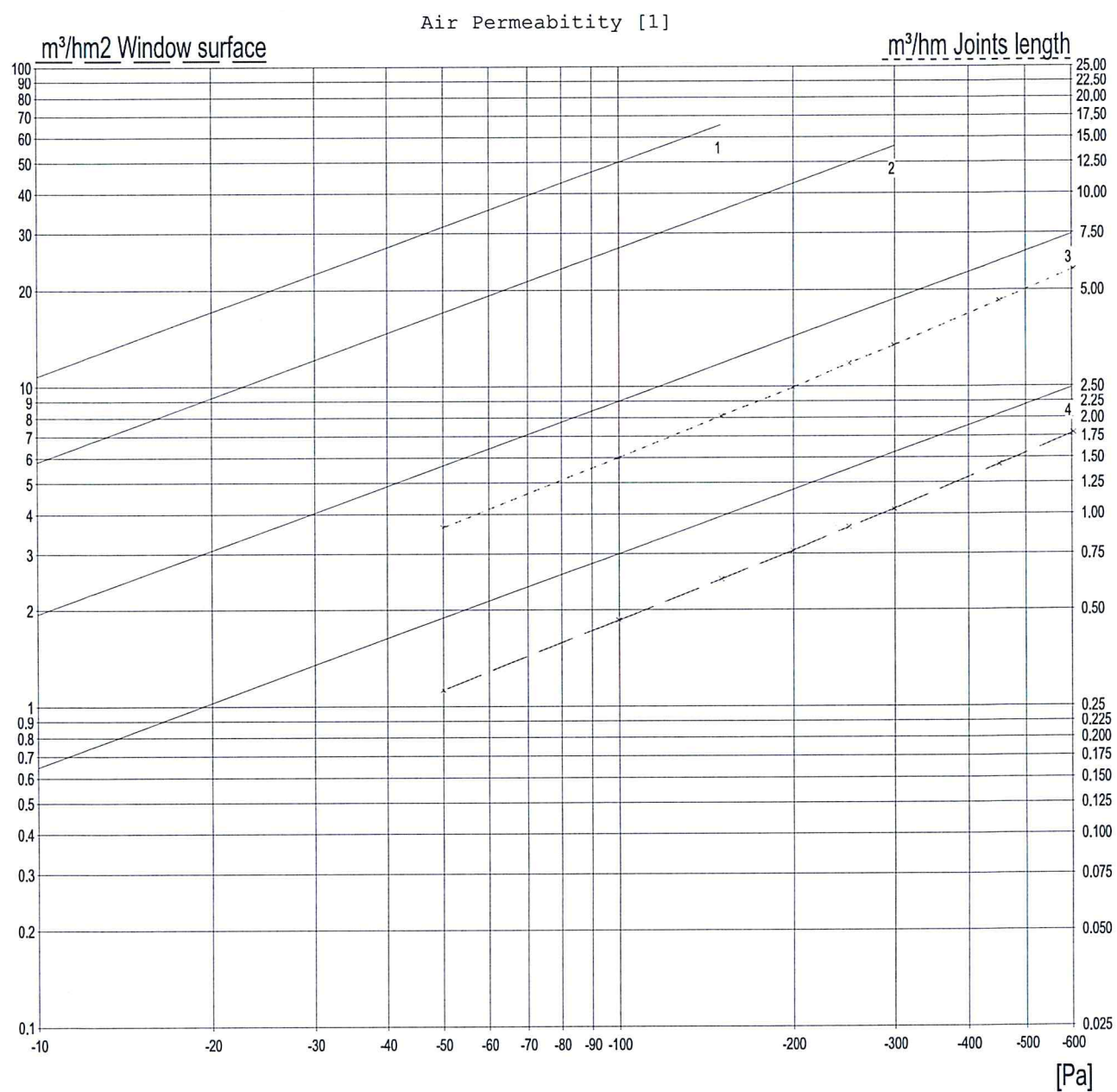


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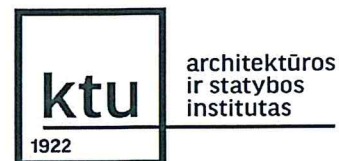
Air Permeability suction:



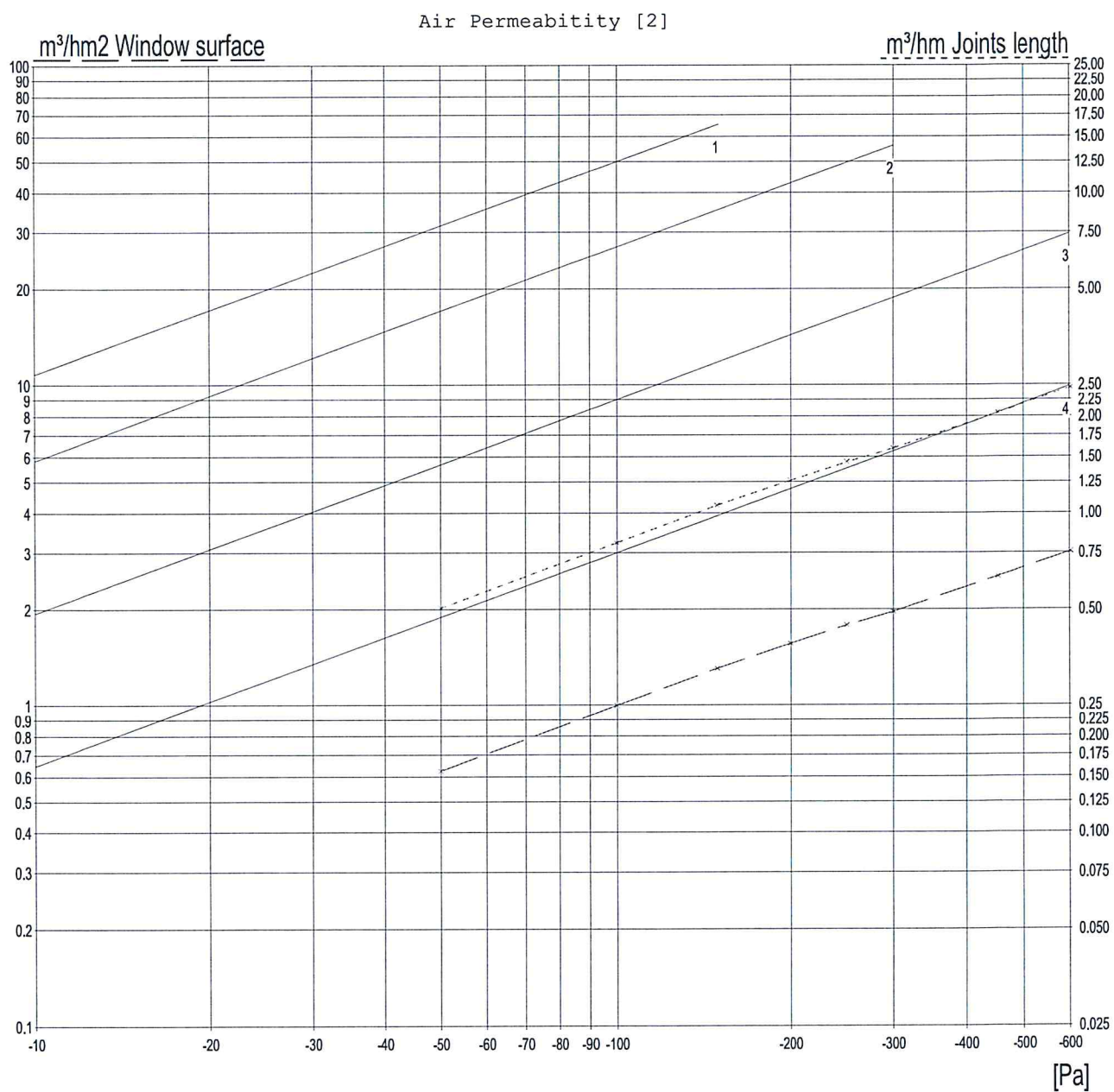


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Air Permeability suction:

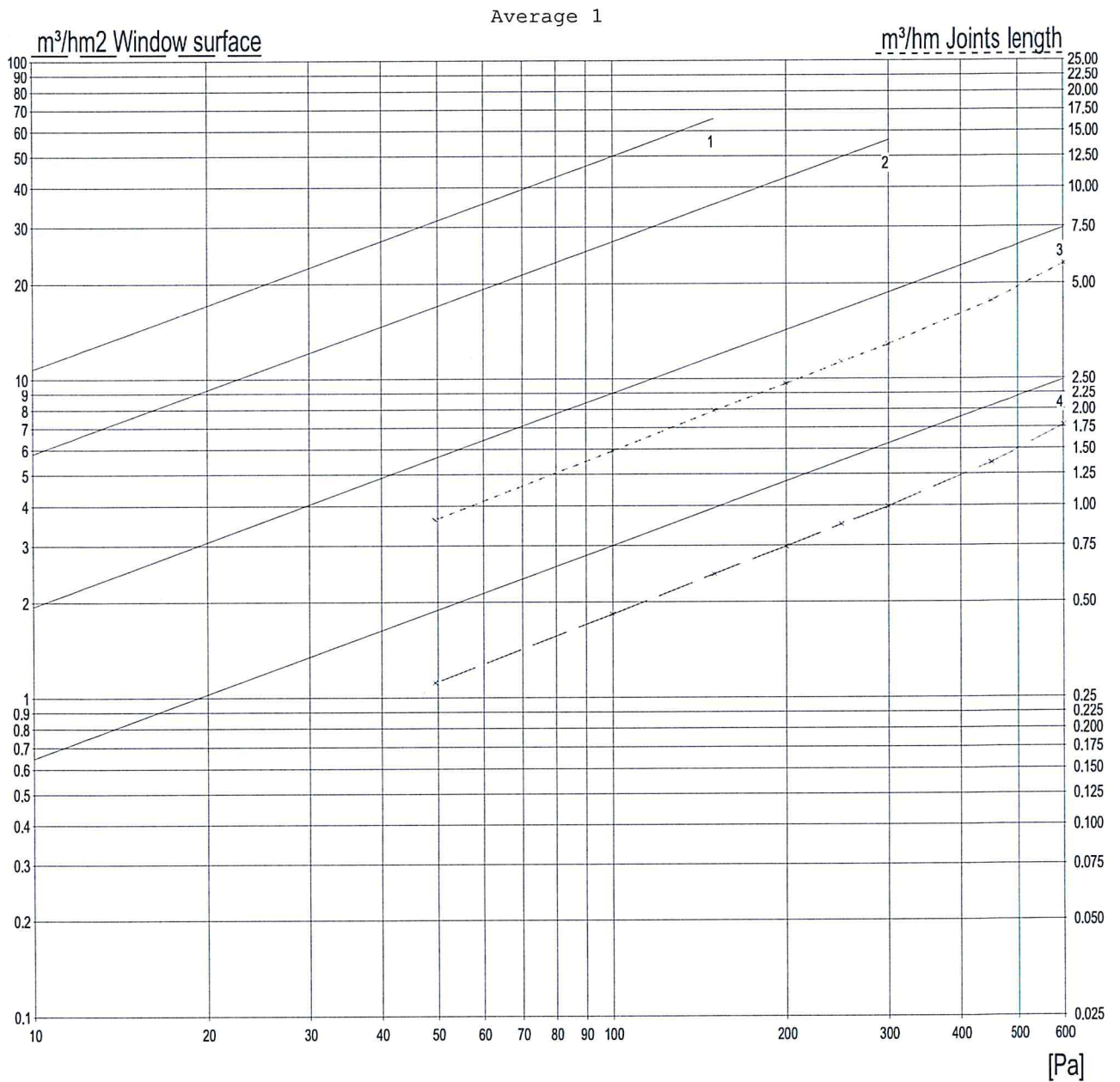


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Air Permeability Average:

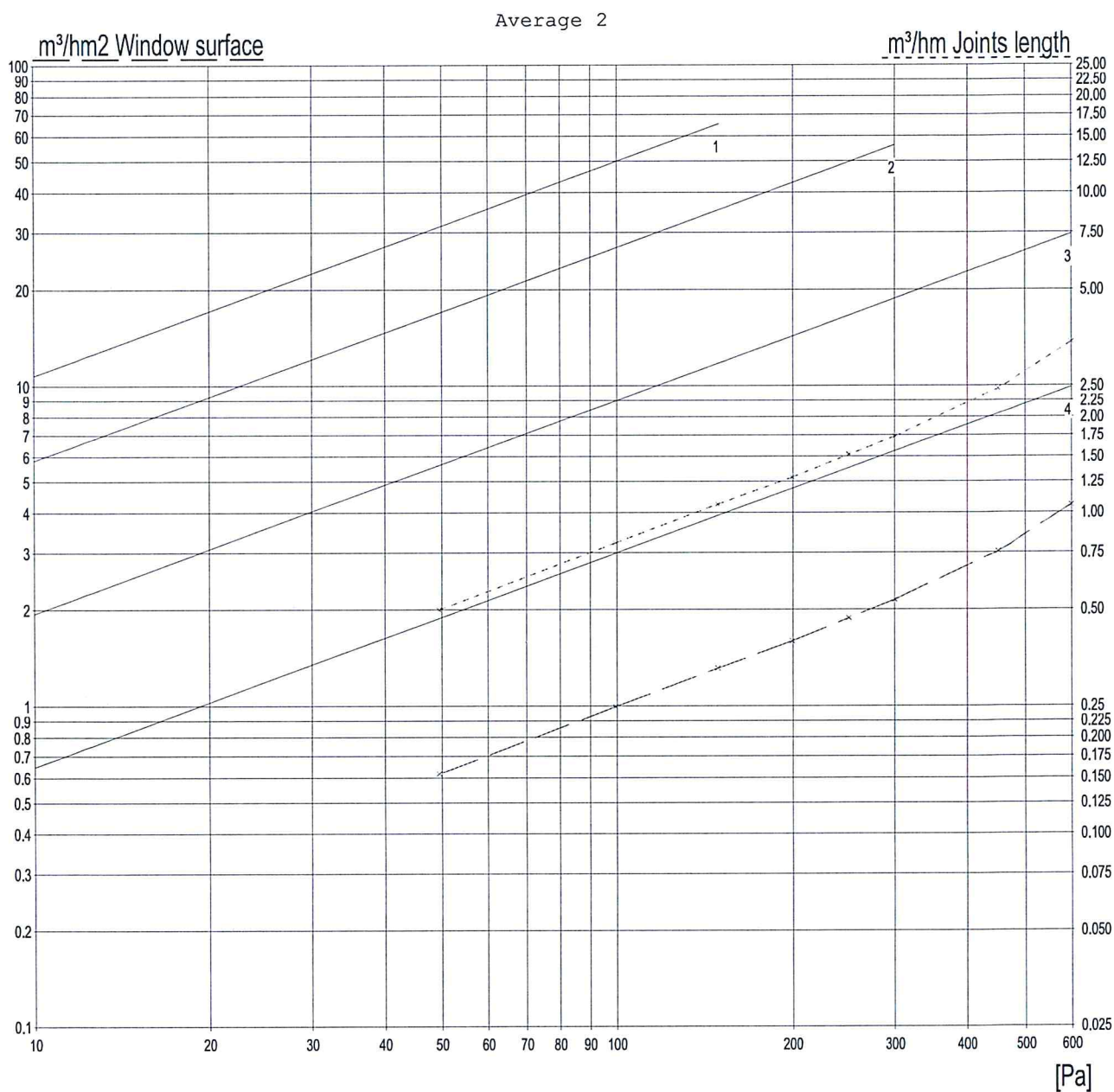


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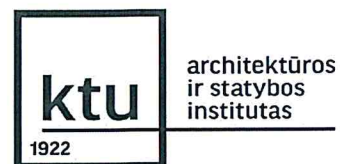
Air Permeability Average:





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## Watertightness: EN 12208 -

Spaying method A      Number of nozzles: 5      Vol. Water: 600.0 litre/hour  
Spaying angle: 24 Degree      : 10.0 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         | 100  | 00:05:00 | OK     |
| 150         | 151  | 00:05:00 | OK     |
| 200         | 201  | 00:05:00 | OK     |
| 250         | 251  | 00:05:00 | OK     |

Watertightness Class: A6

Point of water ingress :

Probable cause of leakage :

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## Wind Resistance: EN 12210

Temperature: 27 Celsius Humidity: 56 % Air pressure: 1001.9 HPa

|                           |       |       |
|---------------------------|-------|-------|
| Wind Resistance: EN 12210 |       |       |
| P1 for deflection         | 1200  | -1200 |
| P2 for cycles             | -600  | 600   |
| P3 for safety test        | -1800 | 1800  |

Deflection:

Distance between the way transducers

a01 <-> c03 = 1200 mm

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

Wind Resistance P1 pressure

3 Pressure pulses 1320 Pa implemented

| Pressure |        | Distortion  |             |            | Distortion | Distortion |
|----------|--------|-------------|-------------|------------|------------|------------|
| Desired  | Actual | Absolute    |             |            | Relative   | class      |
| 1200     | 1199   | a01= -20.90 | b02= -14.28 | c03= -0.92 | f01= -3.37 | C (1/ 356) |
| 0        | 0      | a01= 0.02   | b02= 0.00   | c03= -0.02 | f01= 0.00  |            |

Class: 3

Wind Resistance P1 suction

3 Pressure pulses -1320 Pa implemented

| Pressure |        | Distortion |            |           | Distortion | Distortion |
|----------|--------|------------|------------|-----------|------------|------------|
| Desired  | Actual | Absolute   |            |           | Relative   | class      |
| -1200    | -1204  | a01= 21.22 | b02= 14.26 | c03= 0.80 | f01= 3.25  | C (1/ 369) |
| 0        | 0      | a01= 0.17  | b02= 0.10  | c03= 0.00 | f01= 0.02  |            |

Class: 3

Pressure pulses

50 Cycles -600 Pa / 600 Pa implemented

Remark :

Class: 3C

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Safety test

P3 = Pa Des/Est: -1800 / -1839 : 0 / 0

Remark Suction :

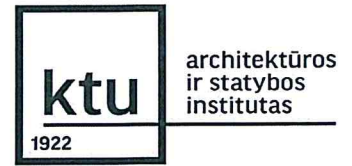
P3 = Pa Des/Est: 1800 / 1568 : 0 / 0

Remark Pressure :



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### Window sketch:

Dimensions (W x H) : 2.000 m x 1.700 m  
Joints length: 4.200 m  
Window surface: 3.400 m<sup>2</sup>  
Sash surface: 1.092 m<sup>2</sup>

