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Notified Body 1020
Branch 0100 – Praha

REPORT

on the assessment of performance

according to the Regulation (EU) 305/2011 of the European Parliament and of the Council of 9 March 2011
(the Construction Products Regulation or CPR), Art. 1.4 of the Annex V (system 3)

No. 1020-CPR-010-043118

Trade name:

External aluminium doors

type / variation:

from panels

Technical specification:

EN 14351-1:2006+A2:2016

Manufacturer:

Rene Ossenkolk International

INo: 925 208 45 21
Address: Nowe Żabno 18a, 67-100 Nowa Sól, Poland
Plant: Rene Ossenkolk International
Address: Nowe Żabno 18a, 67-100 Nowa Sól, Poland
Order: Z010190257

Number of report pages including title-page: 9

Number of Annexes: 4

The person taking responsibility for the content of this report:



Ing. Radka Sedmidubská
Head Assessor

The person taking responsibility for the correctness of this report:

Stamp of the Notified Body 1020

Praha, August 31, 2020




Ing. Iveta Jiroutová
Deputy Manager of the Notified Body 1020

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1. Specification of tested subject

External aluminium doors - single and double leaf doors (bolted solid doors from panels) opening outwards. Intended use: in commercial buildings and distribution substations
Section profile schema see Annex 1.

Door frame: aluminium extruded "L" profile (one chamber) – construction depth 60 mm, wall thickness – min. 2,0 mm

Manufacturer: EMAX (Netherlands)

Door leaf: aluminium bolted solid panels with stiffening ribs – total thickness 30 mm (one chamber), wall thickness min. 2,0 mm; "U" profile (depth 40 mm, width 30 mm) - top and bottom from internal side (width of the leaf) fastens the whole construction

Manufacturer: EMAX (Netherlands)

Gasket: profiled seal (around the perimeter) – in the groove of the door frame (from the exterior side); + for double leaf doors, between leaves – 2x seal

Manufacturer: EMKA (Netherlands)

Hardware:

- two door hinges / leaf, with the required load capacity

Manufacturer: Rene Ossenkloek International (Poland)

- lock (Nemef) with key

Manufacturer: Assa Abloy (Netherlands)

- panic exit device (from interior) – push bar

Manufacturer: Moergestel BV Tilburg (Netherlands)

- bolt head, dead bolt, vertical rod (stainless steel), round handle (from exterior)

Manufacturer: Rene Ossenkloek International (Poland)

Accessories: storm chain, screws M8 x 30 (stainless steel)

Technical specification: EN 14351-1:2006+A2:2016

List of samples:

Sample No. 1: Single leaf door; width 1205 mm, height 2200 mm; leaf 1149 x 2146 mm
No. of sample VZ010200091-A (right door)

Sample No. 2: Double leaf door; width 1797 mm, height 2200 mm; leaf 865 x 2146 mm
No. of sample VZ010200091-B (active leaf - right)

Sample No. 3: Single leaf door; width 1230 mm, height 2180 mm (size for calculation)

Manufacturer: Rene Ossenklok International
Nowe Żabno 18a, 67-100 Nowa Sól, Poland

Plant: Rene Ossenklok International
Nowe Żabno 18a, 67-100 Nowa Sól, Poland

2. Sampling

Date of sampling: --

Place of sampling: Sampling were made by producer and the tested samples were delivered by producer to the laboratory

Sampler: Rene Ossenklok International

Sampling method: in accordance with the requirements EN 14351-1:2006+A2:2016

Transport mode: by using transport services

Date of the taking over: February 27, 2020 and April 30, 2020

Sample Registration number: VZ010200091-A (sample No. 1)
VZ010200091-B (sample No. 2)

3. The assessment of performance on basis of testing, calculation, tabuled values, descriptive documentation

The assessment was carried out on basis of testing and calculation.

Essential characteristics: - Air permeability

- Watertightness
- Resistance to wind load
- Thermal transmittance

Test equipment and measuring devices:

- Test stand for airpermeability test, watertightness test and resistance to wind load, Rosenheim system, type VH APCE, producer Holten, Germany.....ID 328
- Tape measure 3 mID 347
- Humidity-meter + temperature indicator.....ID 343

3.1 The assessment on basis of testing

3.1.1 Air permeability

3.1.1.a) Sample specification: Single leaf door; width 1205 mm, height 2200 mm, sample No. 1

Determination according to test method: EN 1026:2017, classification in accordance with: EN 12207:2017

Test was carried out by: TZÚS Praha, s.p., ATL No. 1018.3, Testing department Praha

Date of test: 03.07. 2020

Another data about the test: see Annex 2a and 2b (course increase air permeability)

Test results:

Characteristic	Obtained data value	Classification
Air permeability	At a positive test pressure 633 Pa, max. air permeability 5,79 m ³ /h.m; see graph in Annex 2a	Class 3 (according to the total area Class 3, according to the length of joints Class 2)
	At negative test pressure - 377 Pa, max. air permeability 27,45 m ³ /h.m; see graph in Annex 2b	Class 2 (according to the total area Class 2, according to the length of joints Class 1)
overall evaluation		Class 2

3.1.1.b) Sample specification: Double leaf door; width 1797 mm, height 2200 mm, sample No. 2

Determination according to test method: EN 1026:2017, classification in accordance with: EN 12207:2017

Test was carried out by: TZÚS Praha, s.p., ATL No. 1018.3, Testing department Praha

Date of test: 09.07. 2020

Another data about the test: see Annex 3a and 3b (course increase air permeability)

Test results:

Characteristic	Obtained data value	Classification
Air permeability	At a positive test pressure 611 Pa, max. air permeability 9,16 m ³ /h.m; see graph in Annex 3a	Class 2 (according to the total area Class 2, according to the length of joints Class 2)
	At negative test pressure - 271 Pa, max. air permeability 22,08 m ³ /h.m see graph in Annex 3b	Class 2 (according to the total area Class 2, according to the length of joints Class 1)
overall evaluation		Class 2

3.1.2 Watertightness

3.1.2.a) Sample specification: Single leaf door; width 1205 mm, height 2200 mm, sample No. 1

Determination according to test method: EN 1027:2017, classification in accordance with: EN 12208:2001

Test was carried out by: TZÚS Praha, s.p., ATL No. 1018.3, Testing department Praha

Date of test: 03.07. 2020

Another data about the test: see Figure 1

Test results:

Characteristic	Obtained data value	Classification
Watertightness	After sprinkling 55 s at the pressure 50 Pa - water penetration in the right bottom corner and in the middle of the horizontal portion functional joints – see Figure 1	Class 1A

3.1.2.b) Sample specification: Double leaf door; width 1797 mm, height 2200 mm, sample No. 2

Determination according to test method: EN 1027:2017, classification in accordance with: EN 12208:2001

Test was carried out by: TZÚS Praha, s.p., ATL No. 1018.3, Testing department Praha

Date of test: 09.07. 2020

Another data about the test: see Figure 2

Test results:

Characteristic	Obtained data value	Classification
Watertightness	After sprinkling 50 s at the pressure 50 Pa - water penetration in the middle of the horizontal portion functional joints – see Figure 2	Class 1A

3.1.3 Resistance to wind load

3.1.3.a) Sample specification: Single leaf door; width 1205 mm, height 2200 mm, sample No. 1

Determination according to test method: EN 12211:2017, classification in accordance with: EN 12210:2017

Test was carried out by: TZÚS Praha, s.p., ATL No. 1018.3, Testing department Praha

Date of test: 08.07. 2020

Another data about the test: span 2100 mm, see Figure 1

Test results:

Characteristic	Obtained data value	Classification
Resistant to wind load	- maximum frontal deflection 0,6 (1,1) mm at a positive test pressure 400 (2000) Pa - in safety test of 600 (3000) Pa the sample resisted and remained fully functional	Class C1 (C5)
	- maximum frontal deflection 1,3 mm at a negative test pressure 400 Pa - in safety test of 600 Pa the sample resisted and remained fully functional	Class C1
overall evaluation		Class C1

Figure 1 - single leaf door



- Location of water penetration
 X Closing points (incl. deadbolts)
 A, B, M Location of measuring points in the test deflection of wind load

Figure 2 - double leaf door

- Location of water penetration
- X Closing points (incl. deadbolts)
- A, B, M Location of measuring points in the test deflection of wind load

3.1.3.b) Sample specification: Double leaf door; width 1797 mm, height 2200 mm, sample No. 2

Determination according to test method: EN 12211:2017, classification in accordance with: EN 12210:2017

Test was carried out by: TZÚS Praha, s.p., ATL No. 1018.3, Testing department Praha

Date of test: 10.07. 2020

Another data about the test: span 2100 mm, see Figure 2

Test results:

Characteristic	Obtained data value	Classification
Resistant to wind load	- maximum frontal deflection 0,55 (5,7) mm at a positive test pressure 400 (2000) Pa - in safety test of 600 (3000) Pa the sample resisted and remained fully functional	Class C1 (C5)
	- maximum frontal deflection 0,9 mm at a negative test pressure 400 Pa - in safety test of 600 Pa the sample resisted and remained fully functional	Class C1
overall evaluation		Class C1

3.2 The assessment on basis of calculation

3.2.1. Thermal transmittance

Sample specification: single leaf door; width 1230 mm, height 2180 mm, sample No. 3

Assesment according to test method: EN ISO 10077-1,2:2019

Test was carried out by: TZÚS Praha, s.p., ATL No. 1018.3, Testing department Praha

Date of issue of the protocol: 05.08. 2020

Another data about the test: Annex 4 (Test report No. 010 – 043117 on thermal transmittance calculation)

Test results:

Characteristic	Obtained data value	Classification
Thermal transmittance	$U_D = 5,7 \text{ W/m}^2.\text{K}$	-

4 Test results summary

Essential characteristics	Obtained data value – external aluminium doors		
	Sample No. 1 1205 x 2200 mm	Sample No. 2 1797 x 2200 mm	Sample No. 3 1230 x 2180 mm
Air permeability	Class 2	Class 2	-
Watertightness	Class 1A	Class 1A	-
Resistance to wind load	Class C1	Class C1	-
Thermal transmittance	-	-	5,7 W/m².K

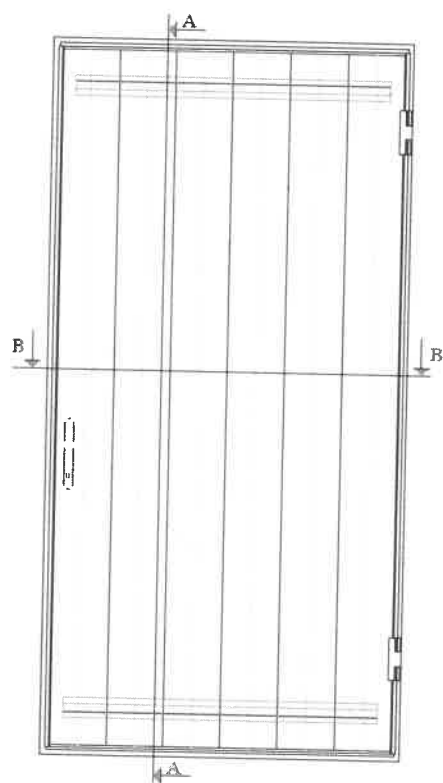
5 List of Annexes

- Annex 1**.....Door section profile schema, photo from tests
- Annex 2a**.....Course of air permeability increase - positive test pressure (sample No. 1)
- Annex 2b**.....Course of air permeability increase - negative test pressure (sample No. 1)
- Annex 3a**.....Course of air permeability increase - positive test pressure (sample No. 2)
- Annex 3b**.....Course of air permeability increase - negative test pressure (sample No. 2)
- Annex 4**.....Report No. 010 - 043117 on thermal transmittance calculation

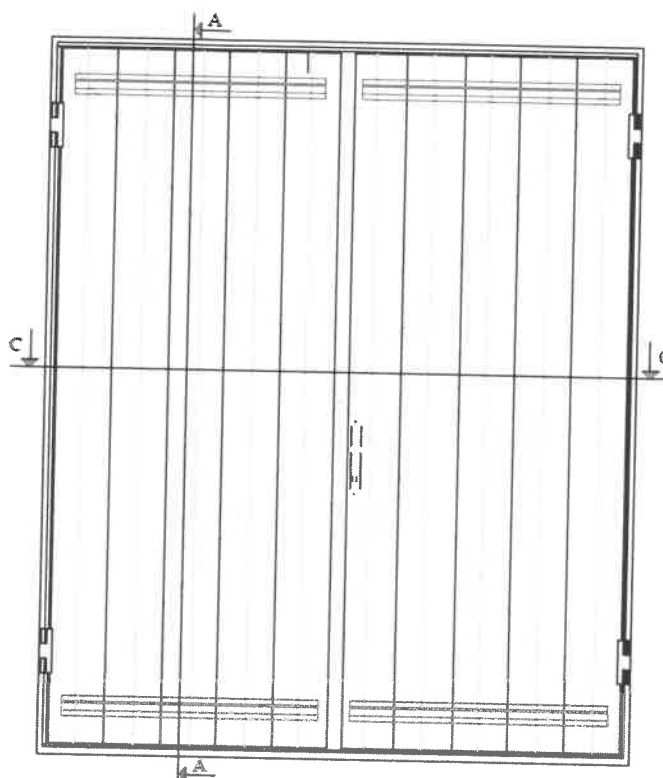
End of Report

EXTERNAL ALUMINIUM DOORS

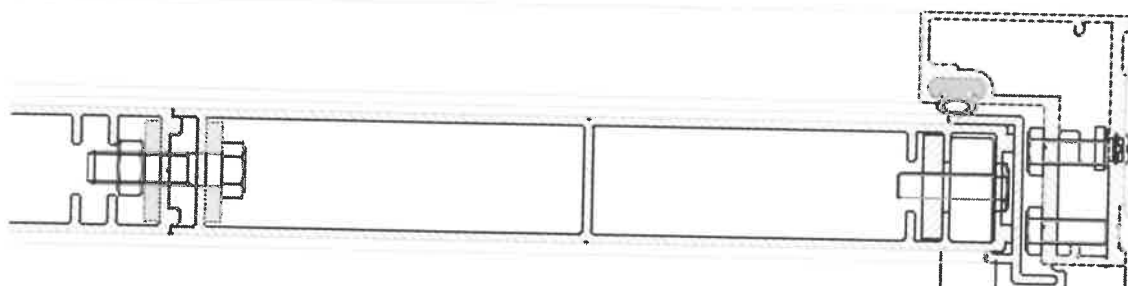
Single leaf door



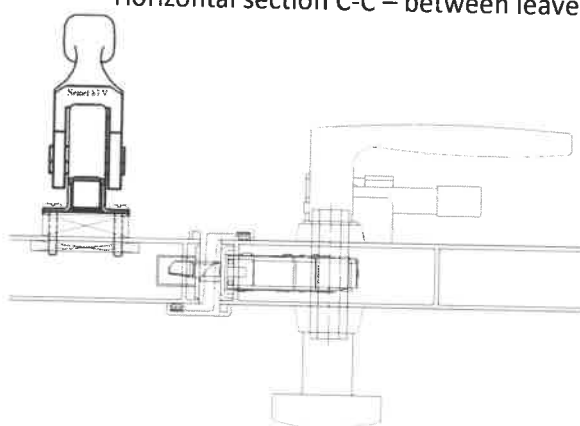
Double leaf door



Horizontal section



Horizontal section C-C – between leaves



Vertical section A-A – bottom

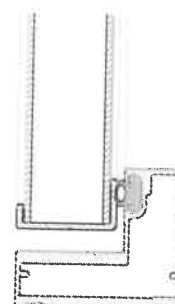


PHOTO DOCUMENTATION OF THE DOORS

a) Single leaf door



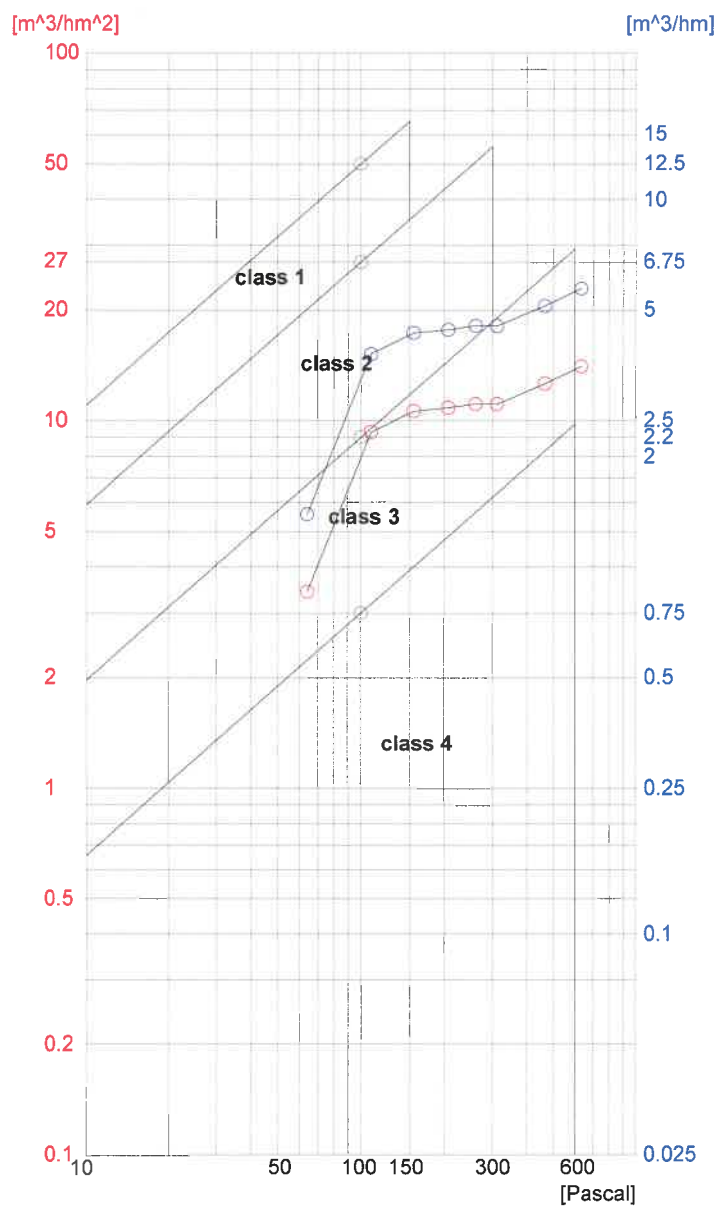
b) Double leaf door



Details



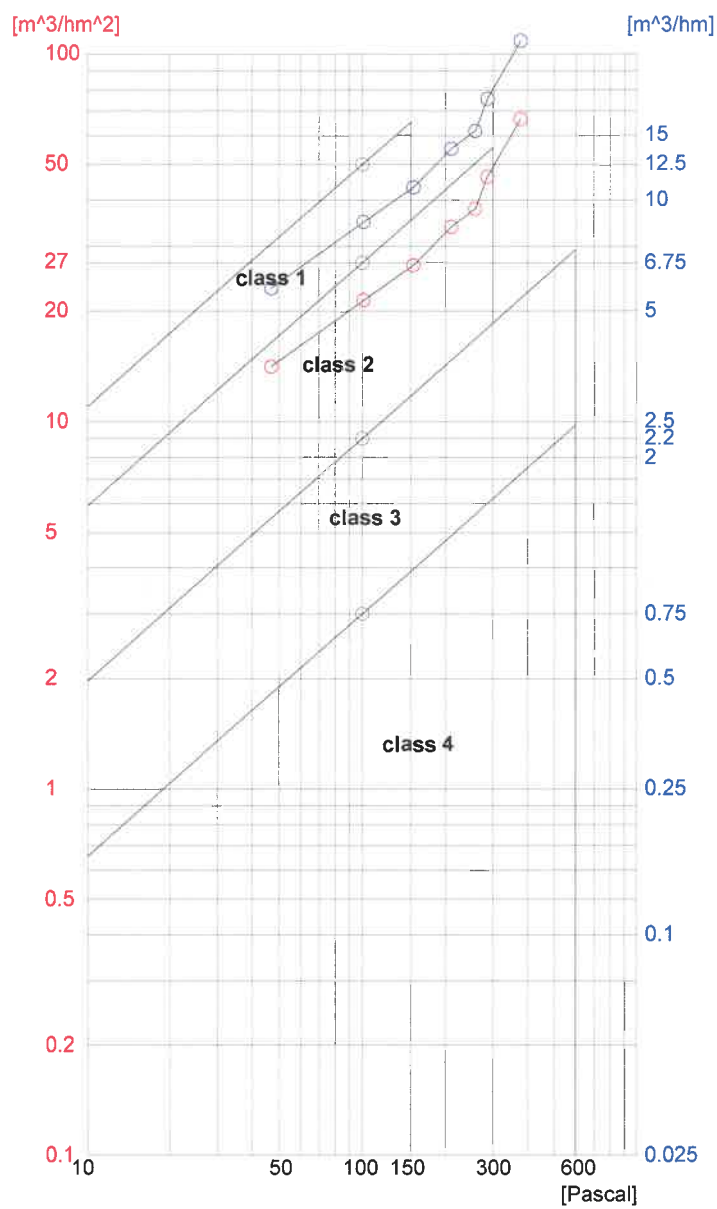
3.7.2020 8:38:22

plocha [m²]: 2.64

délka spár [m]: 6.4

[Pascal]	[m ³ /h]	[m ³ /hm ²]	[m ³ /hm]
64	9.0	3.43	1.41
109	24.6	9.32	3.84
155	28.0	10.62	4.38
207	28.6	10.84	4.47
260	29.3	11.10	4.58
311	29.3	11.08	4.57
465	33.2	12.59	5.19
633	37.1	14.04	5.79

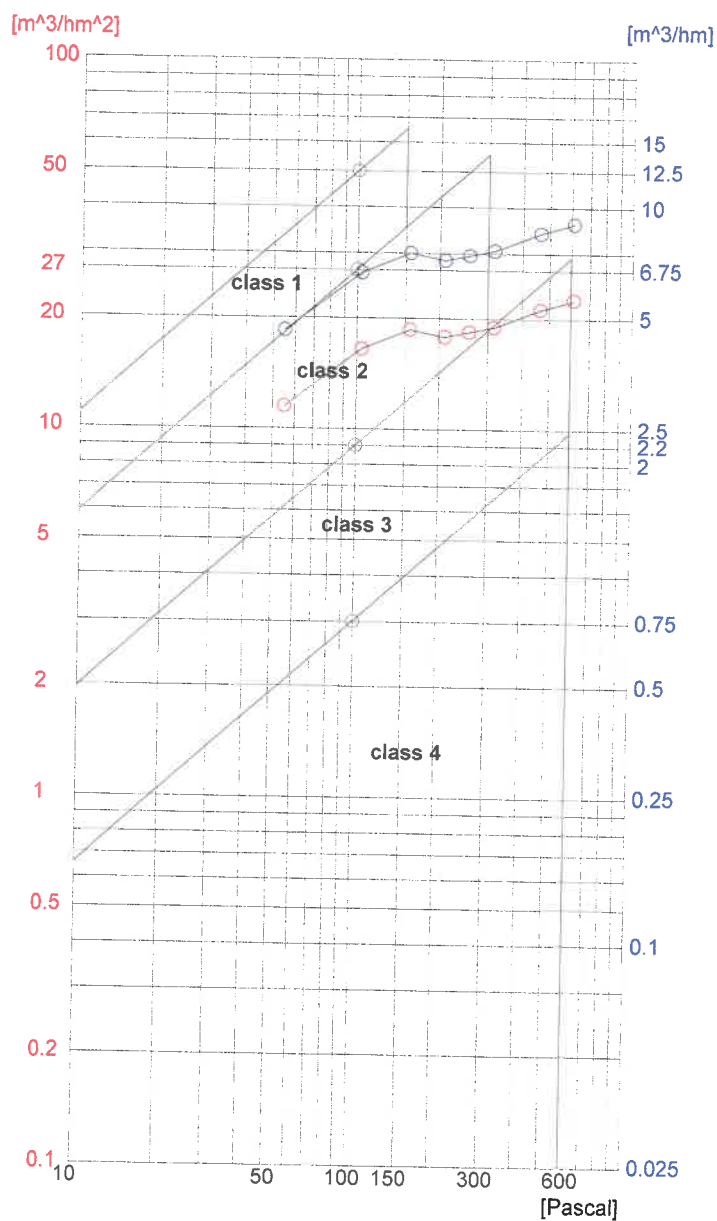
3.7.2020 9:51:14

plocha [m²]: 2.64

délka spár [m]: 6.4

[Pascal]	[m ³ /h]	[m ³ /hm ²]	[m ³ /hm]
-47	37.2	14.11	5.82
-101	56.4	21.38	8.82
-153	70.2	26.59	10.97
-210	89.3	33.84	13.96
-257	100.1	37.90	15.63
-285	122.3	46.34	19.11
-377	175.7	66.54	27.45

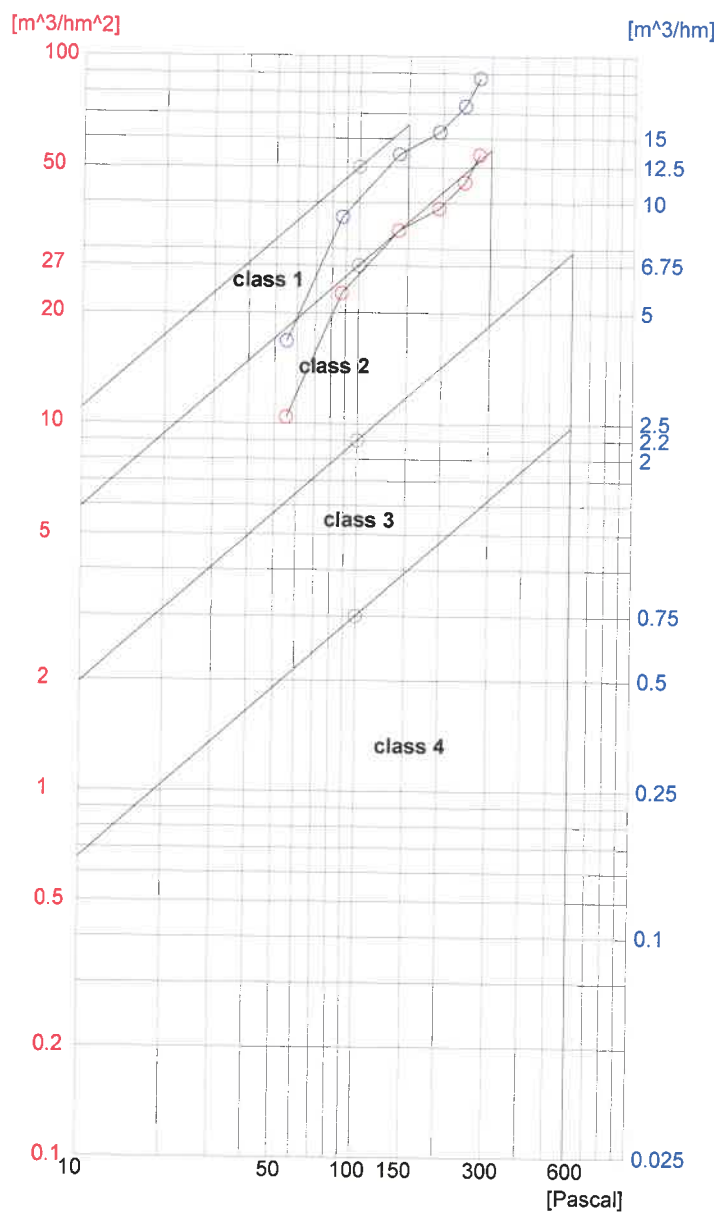
9.7.2020 13:09:50



plocha [m²]: 3.95
 délka spár [m]: 9.69

[Pascal]	[m³/h]	[m³/hm²]	[m³/hm]
55	45.2	11.45	4.67
104	64.9	16.44	6.70
156	73.5	18.61	7.59
209	70.4	17.82	7.26
256	72.6	18.37	7.49
315	74.9	18.95	7.73
464	83.6	21.16	8.62
611	88.8	22.48	9.16

9.7.2020 13:18:14



plocha [m²]: 3.95
 délka spár [m]: 9.69

[Pascal]	[m ³ /h]	[m ³ /hm ²]	[m ³ /hm]
-55	41.1	10.40	4.24
-87	89.5	22.66	9.24
-139	132.7	33.61	13.70
-194	152.5	38.61	15.74
-240	179.6	45.47	18.54
-271	213.9	54.16	22.08



TEST REPORT

issued by Testing Laboratory No. 1018.3
accredited pursuant to ČSN EN ISO/IEC 17025:2018 by Czech Accreditation Institute

No. 010-043117

on thermal transmittance calculation according to ČSN EN ISO 10077-1,2

Manufacturer: Rene Ossenklopp International
Address: Nowe Żabno 18a, 67-100 Nowa Sól, Poland

Company ID: 925 208 45 21

Test sample: **External aluminium door**

Order No.: Z010190257

Number of pages of the Test Report incl. title page: 6

Number of Annexes: 1

Prepared by:

Ing. Radka Sedmidubská
specialist

Approved by:



Ing. Iveta Jiroutová
Deputy head of the testing department

Print No.: 1

Number of prints: 4

Praha, on 05.08. 2020

Stamp of testing department No. 1018.3

Declaration: 1) The test results in this Report relate only to the tested article and they do not substitute any other documents
2) The Test Report must be copied as a whole only otherwise a written consent of the testing laboratory is needed.

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Entered in the Commercial Register maintained by Municipal Court in Prague, Section ALX, Insert 711, Comp ID: 00015679, VAT: CZ00015679

1. Details of the test object

Test object: **External aluminium single leaf door from panels, size 1,23 x 2,18 m**
Section profile schema see Annex 1.

Manufacturer: Rene Ossenklok International

Order: Z010200030

Place of production: Nowe Żabno 18a, 67-100 Nowa Sól, Poland

2. Specification of the calculated subject

Door frame: aluminium extruded "L" profile (one chamber) – construction depth 60 mm, wall thickness – min. 2,0 mm

Manufacturer: EMAX (Netherlands)

Door leaf: aluminium bolted solid panels with stiffening ribs – total thickness 30 mm (one chamber), wall thickness min. 2,0 mm; "U" profile (depth 40 mm, width 30 mm) - top and bottom from internal side (width of the leaf) fastens the whole construction

Manufacturer: EMAX (Netherlands)

Gasket: profiled seal (around the perimeter) – in the groove of the door frame (from the exterior side)
Manufacturer: EMKA (Netherlands)

Hardware:

- two door hinges / leaf

Manufacturer: Rene Ossenklok International (Poland)

- lock (Nemef) with key

Manufacturer: Assa Abloy (Netherlands)

- panic exit device (from interior) – push bar

Manufacturer: Moergestel BV Tilburg (Netherlands)

- bolt head, dead bolt, vertical rod (stainless steel), round handle (from exterior)

Manufacturer: Rene Ossenklok International (Poland)

Accessories: storm chain, screws M8 x 30 (stainless steel)

Note: The hardware was not considered in the calculation (with regard to quantity and type of product – without thermal insulation)



3. Mode of calculation

3.1. For the calculation were used these standards:

ČSN EN ISO 10077-1:2019.....Thermal performance of windows, doors and shutters
- Calculation of thermal transmittance - Part 1: General

ČSN EN ISO 10077-2:2019.....Thermal performance of windows, doors and shutters
- Calculation of thermal transmittance - Part 2: Numerical
method for frames

3.2. Details of deviations from the calculating procedure:

no deviations

4. Computer program, licence contract

Calculation was done by AREA 2017 and MESHGEN 2018 (Svoboda software) under a licence contract between the user TZÚS Praha, s.p., branch 0100 – Praha, Prosecká 76a, Praha 9 and Dr. Ing. Zbyněk Svoboda, Kladno, dated 5.1. 2006.

5. List of submitted documents

- Technical product description
- Sections of the door in “dxf” format (vertical, horizontal)

6. Thermal transmittance of the frame and door infill

6.1. Generally

Calculation was done by AREA 2017 and MESHGEN 2018 (Svoboda software) according to ČSN EN ISO 10077-1 and ČSN EN ISO 10077-2. Thermal conductance of frame L_f was determined. For calculation the middle part of the door leaf was substituted by insulating panel with the known properties. After that thermal transmittance of frame U_f was calculated according ČSN EN ISO 10077-2.



Characteristics of interior air:

- design internal temperature 20°C
- design relative internal air humidity 50%
- internal resistance of heat transfer was entered value 0,13 m².K/W (common locations) and 0,2 m².K/W (in corners – in places with reduced airflow)

Characteristics of exterior air:

- design external temperature in winter season was calculated 0°C
- design relative external humidity 84%
- and external resistance of heat transfer 0,04 m².K/W

Notes:

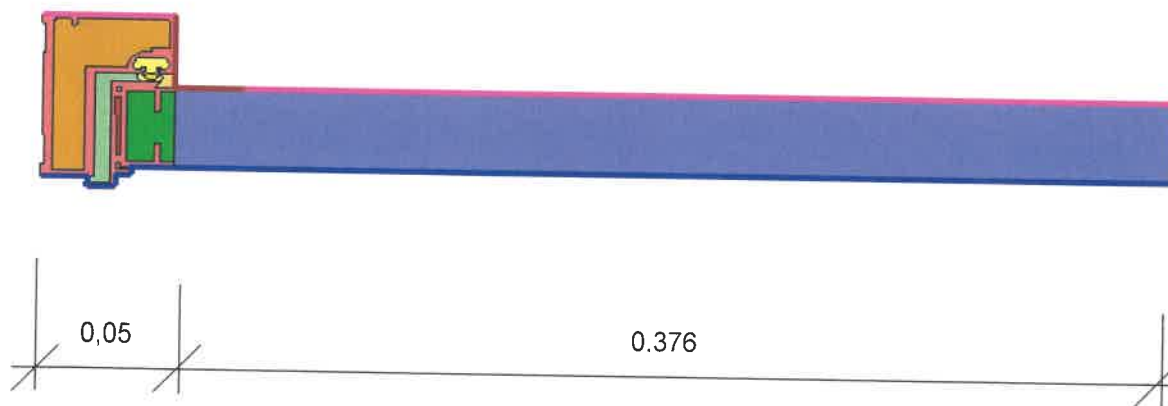
- 1) Frame.....door frame + part of the door leaf....width 0,05 m (side and top portion)
- 2) Door infill.....door leaf without edge parts

Characteristics of used materials:

No.	Signification	Material	Unit	Value
1	λ	Aluminium	W/(m.K)	160
2	λ	Gasket (EPDM)	W/(m.K)	0,25
3	λ	Insulating panel (board replacing infill)	W/(m.K)	0,035
4	λ	Air cavity - unventilated	W/(m.K)	0,026 - 0,198
5	λ	Air cavity - moderately ventilated	W/(m.K)	0,065 - 0,067

6.2. Frame

Computational model from software:



Results:

Thermal coupling coefficient L_f^{2D}	0,712 W/(m.K)
Width of the frame b_f	0,05 m
Thermal transmittance of the board replacing infill U_p	0,97 W/(m ² .K)
Width of the board replacing infill b_p	0,376 m

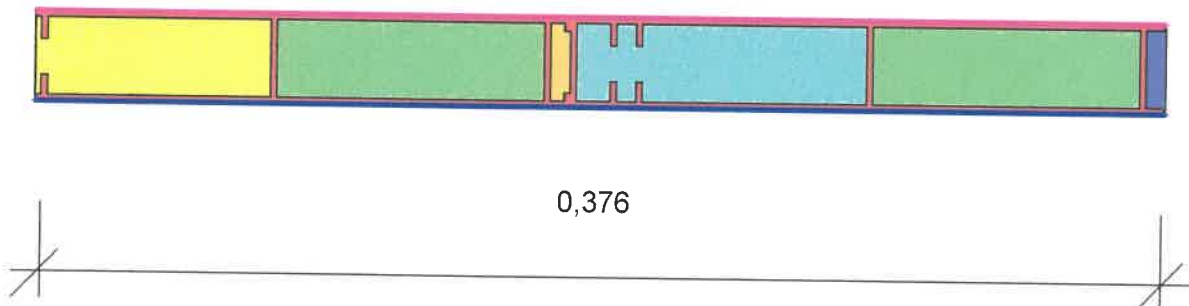
$$U_f = (L_f^{2D} - U_p \cdot b_p) / b_f$$

Thermal transmittance of the frame U_f **6,918 ÷ 6,9 W/(m².K)**

Note: According to ČSN EN ISO 10077-2, art. 7.4 the thermal transmittance of the frame shall be given to two significant figures

6.3. Door infill

Computational model from software:



Results:

Thermal coupling coefficient L_p^{2D}	2,071 W/(m.K)
Width of the characteristic section b_p	0,376 m

$$U_p = L_p^{2D} / b_p$$

Thermal transmittance of the door infill U_p **5,508 ÷ 5,5 W/(m².K)**



7. Thermal transmittance of the door

7.1. Generally

Calculation of total thermal transmittance U_D carried out according ČSN EN ISO 10077-1.

Following information about the door was taken into account:

- a) geometric data – area of frame (A_f), door infill (A_p), infill perimeter (l_p)
- b) data established by this report – thermal transmittance of frame (U_f) and door infill (U_p)

*Note: linear thermal transmittance in imposition of infill (ψ_p)....not calculated separately;
this influence was considered in the calculation of the U_f*

On the basis of these values the total thermal transmittance of the door U_D was calculated:

$$A_f = 0,33 \text{ m}^2$$

$$U_f = 6,9 \text{ W/m}^2\cdot\text{K}$$

$$A_p = 2,35 \text{ m}^2$$

$$U_p = 5,5 \text{ W/m}^2\cdot\text{K}$$

$$\psi_p \dots 0 \text{ W/m}\cdot\text{K}$$

$$U_D = \frac{A_p \cdot U_p + A_f \cdot U_f + l_p \cdot \psi_p}{A_p + A_f} = 5,67 \div \mathbf{5,7 \text{ W/(m}^2\cdot\text{K)}}$$

7.2. Result summary

Thermal transmittance of the door:

Single leaf door	Test method	Determined value
size 1,23 x 2,18 m	ČSN EN ISO 10077-1	$U_D = \mathbf{5,7 \text{ W/m}^2\cdot\text{K}}$

Note: The thermal transmittance of the calculated according to ČSN EN ISO 10077-2, art. 7.2.3 shall be given to two significant figures.

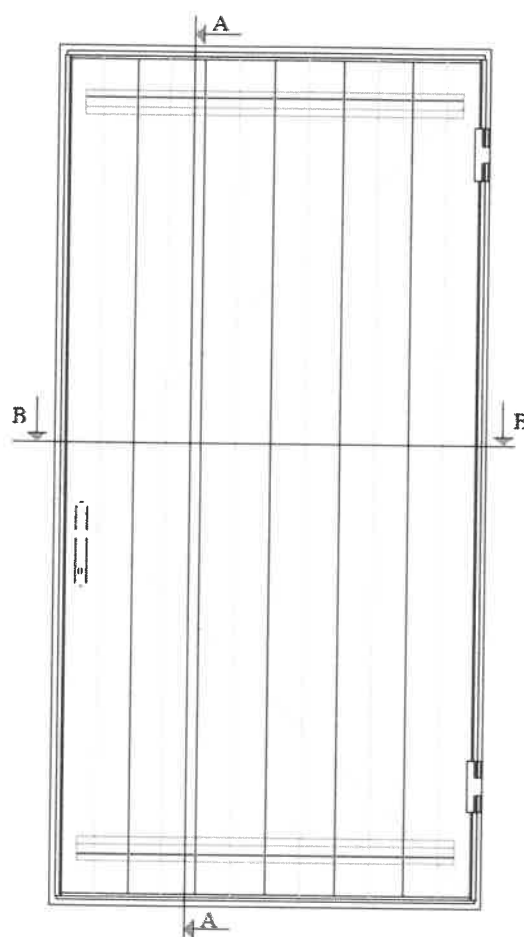
8. List of Annexes

Annex 1 door scheme + section profile scheme

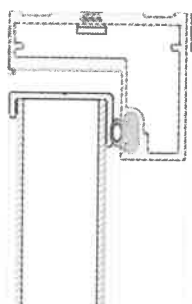
END OF THE TEST REPORT



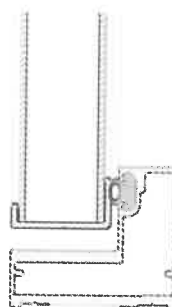
External aluminium door



Vertical section A-A – top



Vertical section A-A – bottom



Horizontal section B-B

