



TEST REPORT

EN 14351-1:2006 + A1:2010

**Windows and doors – Product standard, performance characteristics- Part 1:
Windows and external pedestrian doorsets without resistance to fire and/or smoke
leakage characteristics**

Report Reference No.....: 130318003SHJ-BP-1

Prepared by (name and signature)...: Mike Gu

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Harrison

Approved by (name and signature)...: Fred Bao

Fred

Date of issue.....: April 15, 2013

Contents: Total test report 19 pages including:
Report text: 6 pages
Appendix A for product drawings: 2 pages
Appendix B for information of representative sample door: 1 page
Appendix C for test data summary: 10 pages

Testing Laboratory name: Intertek Testing Services Building Products

Address.....: Building T52-8, No.1201 Gui Qiao Road, Jinqiao Development Area, Pudong District, Shanghai , China

Testing location: Same as above

Applicant's name.....: Enterdoor AB uvv

Address.....: Ambjornsvagen 14 Kungsater Sweden

Test specification:

Standard: EN 14351-1: 2006+A1:2010 Clauses 4.2, 4.5, 4.6, 4.12 and 4.14.

Test item description: Entry Door

Trade Mark: Enterdoor

Model and/or type reference.....: EDAB-001

Manufacturer: Qingdao Liangmu Co., Ltd.

Rating(s): Not specified


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Copy of marking plate and summary of test results (information/comments):


Enterdoor AB ubv Ambjornsvagen 14 Kungsater Sweden
<p style="text-align: center;">EN 14351-1: 2006+A1:2010</p> <p>Entry Door Type: EDAB-001</p> <p><u>Characteristics</u> Resistance to wind load — Test pressure: Class 1 Resistance to wind load — Frame deflection: Class C Watertightness: Non-shielded (A): Class 2A Height and width: 2078 mm, 990 mm Dangerous substance: Compliance declared by manufacturer Thermal transmittance: 1.7 W/(m².K) Air permeability: Class 4</p>

Note:

- a) If the CE marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.
- b) The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5 mm
- c) CE marking and label shall be affixed visibly, legibly and indelibly.

Summary of testing:

The submitted samples were tested in accordance with specified standards, and listed the result accordingly, refer to text for detail.

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Test item particulars
Classification of installation and use : Not specified
Supply Connection..... : Not applicable
Possible test case verdicts
- Test case does not apply to the test object..... : N/A
- Test object does meet the requirement : P (Pass)
- Test object does not meet the requirement : F (Fail)
Testing
Date of receipt of test item : March 22, 2013
Date (s) of performance of tests : From March 25, 2013 to March 29, 2013
General remarks:
<p>This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.</p> <p>Throughout this report a comma (point) is used as the decimal separator.</p> <p>When determining the test result, measurement uncertainty has been considered.</p>

General product information:
The frame dimensions of representative sample: 990 mm wide x 2078 mm high.
The door leaf dimensions of representative sample: 908 mm wide x 2022 mm high.
The representative sample door leaf thickness: 60 mm.
The drawings of the representative sample door can be referenced in Appendix A.
The basic information of the representative sample door can be referenced to Table 1 in Appendix B.
The sample ID Number is IASQSH121129001.001.

Performance test			
Clause	Requirement - Test	Result - Remark	Verdict
4.1	<p>General</p> <p>The performance characteristics for windows and external pedestrian doorsets shall be determined and expressed in accordance with 4.2 to 4.23.</p>		
4.2	<p>Resistance to wind load</p> <p>Tests on windows and external pedestrian doorsets shall be carried out in accordance with EN 12211. Classification according to EN 12210.</p>	<p>Test pressures for Class 1: P1: 400 Pa, P2: 200 Pa, P3: 600 Pa</p> <p>Relative frontal deflection: Class C</p> <p>After repeated pressure test and safety test, no significant damage happened, and the sample door was still operable. The test specimen remained closed</p> <p>The air permeability after tests P1 and P2 <u>did not exceed</u> the upper limits of the claimed air permeability class (Class 4) as specified in EN 12207 by more than 20%. The test specimen meets the requirement of clause 6.1 of EN 12210</p> <p>Conclusion: Final classification C1</p> <p>The data of resistance to wind load can be referenced in Appendix C.</p>	P
4.3	Resistance to snow and permanent load.	Not claimed	N/A
4.4	Fire characteristics	Not claimed	N/A
4.5	<p>Watertightness</p> <p>A watertightness test shall be carried out in accordance with EN 1027, Method 1A. Classification according to EN 12208.</p>	<p>Non-shielded (A): Class 2A</p> <p>Water penetration: When water sprayed for 3minutes and 28 seconds at 100 Pa, the water penetration started at the bottom joint between the door leaf and threshold at the middle of the threshold.</p> <p>The door drawing of watertightness can be referenced in Appendix C.</p>	P

Performance test			
Clause	Requirement - Test	Result - Remark	Verdict
4.6	<p>Dangerous substance</p> <p>In so far as the state of the art permits, the manufacturer shall establish those materials in the product which are liable to emission or migration during normal intended use and for which emission or migration into the environment is potentially dangerous to hygiene, health or the environment.</p>	<p>Manufacturer declared the products can meet requirements of Title VIII and Annex XVII of the Regulation (EC) No. 1907/2006 of the European Parliament and the Council as amended.</p> <p>The customer declared the products do not contain any materials proven as harmful-to-health.</p>	P
4.7	Impact resistance	Not claimed	N/A
4.8	Load bearing capacity of safety devices	Not claimed	N/A
4.9	Height and width of doorsets and French windows	Not claimed	N/A
4.10	Ability to release	Not claimed	N/A
4.11	Acoustic performance	Not claimed	N/A
4.12	<p>Thermal transmittance</p> <p>The test shall be carried out in accordance with EN ISO 12567-1:2010. The thermal transmittance test, U, of the specimen is measured by means of guarded hot-box method in accordance with ISO 8990:1994. Steady-state measurement duration of the specimen is 12 hours.</p>	<p>$U_m = 1.671 \text{ W}/(\text{m}^2 \cdot \text{K})$ $\Delta U_m = \pm 0.113 \text{ W}/(\text{m}^2 \cdot \text{K})$ $U_D = U_{st} = 1.681 \approx 1.7 \text{ W}/(\text{m}^2 \cdot \text{K})$</p>	N/A
4.13	Radiation properties	Not claimed	N/A
4.14	<p>Air permeability – before and after wind load</p> <p>Two air permeability tests shall be carried out in accordance with EN 1026, one with positive test pressures and one with negative test pressures. Classification according to EN 12207.</p>	<p>Length of opening joint: 5.860 m Overall area: 2.507 m².</p> <p>Final classification of air permeability (before wind load): Class 4.</p> <p>The data of air permeability can be referenced from Table 2 to Table 5 and Chart 1 in Appendix C.</p>	P
4.15	Durability	Not claimed	N/A
4.16	Operating force	Not claimed	N/A

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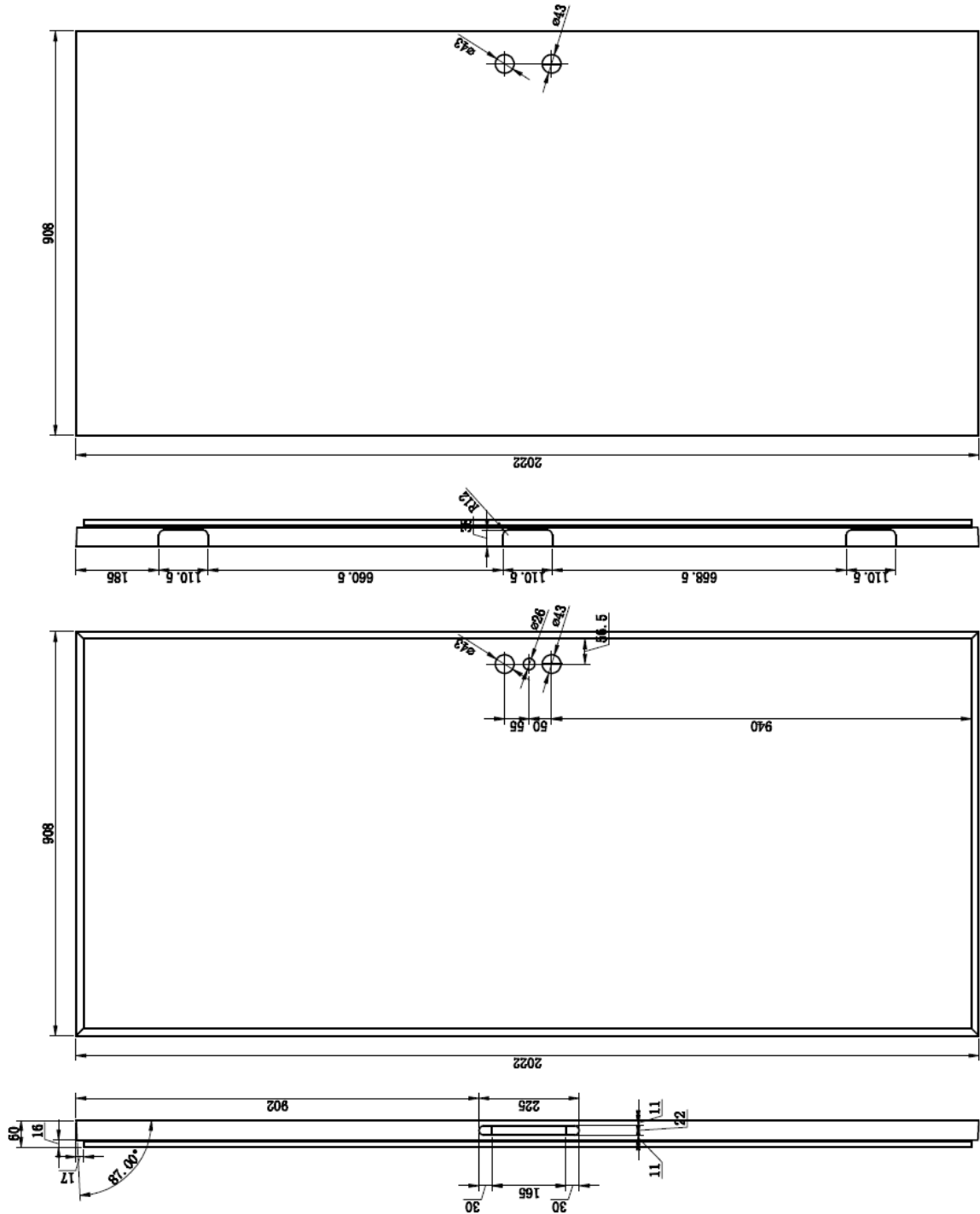
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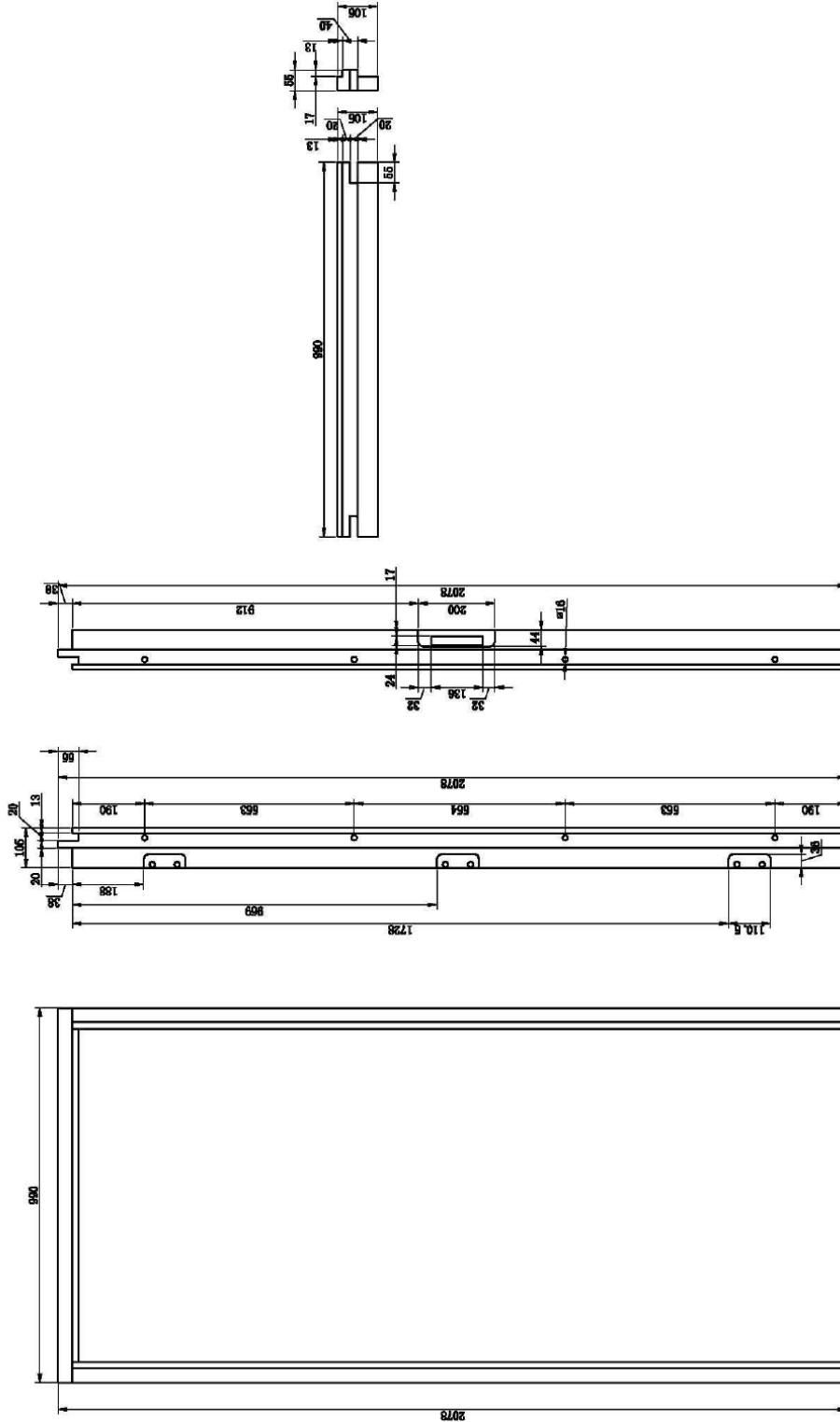


Performance test			
Clause	Requirement - Test	Result - Remark	Verdict
4.17	Mechanical strength	Not claimed	N/A
4.18	Ventilation	Not claimed	N/A
4.19	Bullet resistance	Not claimed	N/A
4.20	Explosion resistance	Not claimed	N/A
4.21	Resistance to repeated opening and closing	Not claimed	N/A
4.22	Behavior between different climates	Not claimed	N/A
4.23	Burglar resistance	Not claimed	N/A
4.24	Special requirement	Not claimed	N/A

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Appendix A
Product Drawings





*****End of Page*****

Appendix B

Information of Representative Sample Door

Table 1

1 Manufacturer: Qingdao Liangmu Co., Ltd.		
2 Window (door) system name / construction type (window, door, casement door): Entry Door, Right Outwards Type/Model: EDAB - 001		
3 Specification of components and their manufacturing plans; fill in material and the manufacturer's marking		
- main profiles manufacturer, supplier: Qingdao Liangmu Co., Ltd.	marking frame, sample (frame) dimensions B x H: 990 x 2078 mm	marking casement (leaf), casement (s) dimensions b x h: 908 x 2022 mm
- other profiles/reinforcement manufacturer, supplier:	marking , false mullion, mullions and transoms, glazing bars, threshold profiles, casement weather mouldings (casement water bars) Door Leaf: 60mm thick made of Solid Oak and Pine with, Surface: Aluminum composited panel and Core: Oxide Magnesium magnesium Threshold: Solid Oak	
- opening joint sealing (preformed gaskets, weather stripping) manufacturer, supplier:	marking interior (internal) preformed gasket, design in the corners* Weather Strip(seal) 10mm thickness	marking central preformed gasket, design in the corners* N/A
	marking exterior (external) preformed gasket, design in the corners*N/A	marking threshold preformed gasket (wiping on the leaf) N/A
- sealing of glazing manufacturer, supplier:	marking external glazing, design in the corners* N/A	marking glazing bead and preformed gasket N/A
Insulating glass manufacturer, supplier:	marking and composition of the glazing and infills N/A	
4 Draining and decompression of casement (glazing groove (rebate): (e.g. at the bottom of 3 openings (5x30 mm) input profile, 2 openings (5x28 mm) with cover output profile; top external preformed gasket is 2x interrupted in the same length of 50 mm). N/A		
5 Draining and decompression of frame (opening joint): N/A		
6 Building hardware (fittings) (marking and manufacturer): Lock/Handle suppliers: ASSA Abloy Material: Iron		
Exit devices (bolts) type (right, left casement, others): number of perimeter points, operating way, auxiliary thrusts, special points N/A		
Hinges (right, left casement, other): sort (turn, tilt and turn) 3 sets, right, turn, suppliers: ASSA Abloy Material: Steel		
7 Notice: *design in the corners: continuously bent, slit (notched), cut and glued in corners, welded, cemented N/A		

Appendix C

Test Data Summary

1. Windows and doors – Air permeability – Test method EN 1026 – before wind load

- Length of opening joints: 5.860 m;
- Overall area: 2.057 m².

Table 2

Air permeability at positive pressure	Test pressure step (Pa)	50	100	150	200	250	300	450	600
	Air permeability								
	absolute (m ³ /h)	0.51	1.21	1.41	2.12	2.22	2.42	3.33	4.95
	related to joints length (m ³ /hm)	0.09	0.21	0.24	0.36	0.38	0.41	0.57	0.84
	related to overall area (m ³ /hm ²)	0.25	0.59	0.69	1.03	1.08	1.18	1.62	2.41

Table 3

Air permeability at negative pressure	Test pressure step (Pa)	50	100	150	200	250	300	450	600
	Air permeability								
	absolute (m ³ /h)	0.91	1.01	1.72	2.22	2.93	3.03	12.33	14.75
	related to joints length (m ³ /hm)	0.16	0.17	0.29	0.38	0.50	0.52	2.10	2.52
	related to overall area (m ³ /hm ²)	0.44	0.49	0.83	1.08	1.42	1.47	5.99	7.17

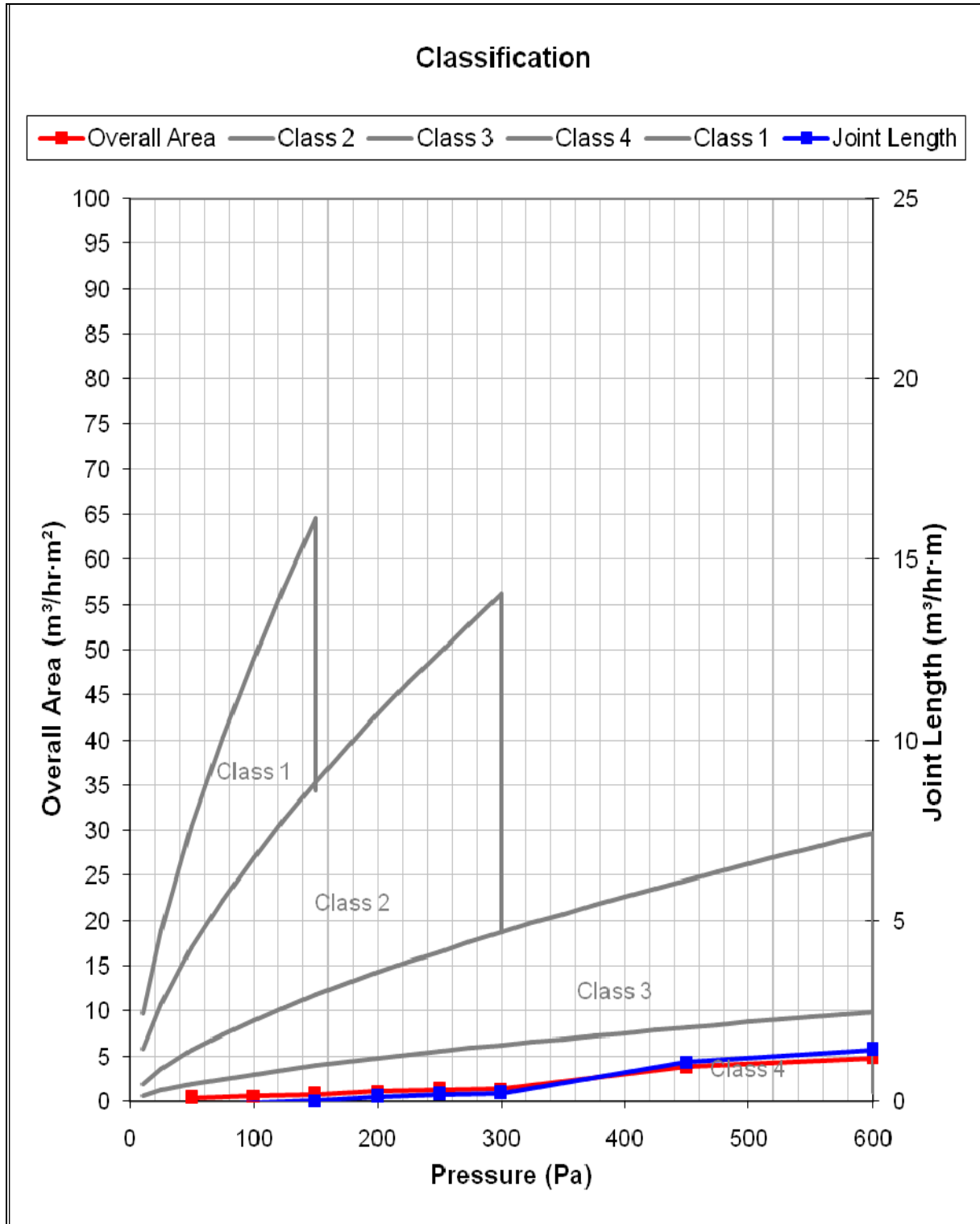
Table 4

Average air permeability	Test pressure step (Pa)	50	100	150	200	250	300	450	600
	Air permeability								
	absolute (m ³ /h)	0.71	1.11	1.57	2.17	2.58	2.73	7.83	9.85
	related to joints length (m ³ /hm)	0.12	0.19	0.27	0.37	0.44	0.47	1.34	1.68
	related to overall area (m ³ /hm ²)	0.34	0.54	0.76	1.06	1.25	1.33	3.81	4.79

Table 5

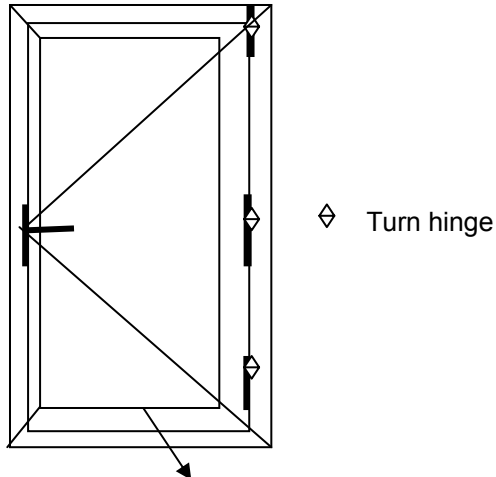
Reference air permeability at 100 Pa related to joints length	Q ₁₀₀ = 0.19 m ³ /hm
Reference air permeability at 100 Pa related to overall area	Q ₁₀₀ = 0.54 m ³ /hm ²
Classification related to joints length (<i>with regard to pressure dependence of air permeability</i>) according to EN 12207	Class: 4
Classification related to overall area (<i>with regard to pressure dependence of air permeability</i>) according to EN 12207	Class: 4
Final classification of the test specimen according to EN 12207	Class: 4

Chart 1 - Air Permeability before Wind load



2. Windows and doors – Watertightness – Test method EN 1027

Door drawing:

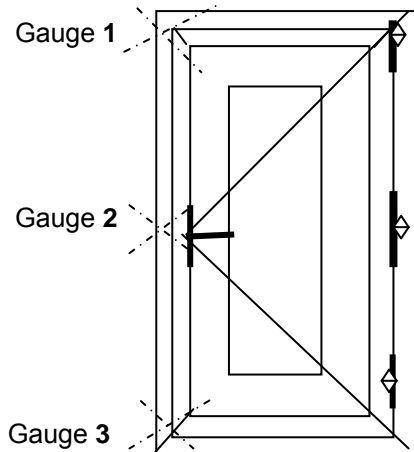


Water penetration: When water sprayed for 3minutes and 28 seconds at 100 Pa, the water penetration started at the bottom joint between the door leaf and threshold at the middle of the threshold.

Test result:
 $P_{max} = 50 Pa$

3. Windows and doors –Resistance to wind load – Test method EN 12211

3.1. Deflection test



(1, 2, 3 are location of gauges)

Frame member length L = 2020 mm

Table 6: Deflection test P1 = 400Pa (Class 1)

Gauge No.	Frontal displacement (deflection) values (mm)							
	Positive pressure +P1	Zero pressure Po	Frontal deflection F _p (mm)	Relative frontal deflection F _{rp} = F _p /L	Negative pressure -P1	Zero pressure Po	Frontal deflection F _p (mm)	Relative frontal deflection F _{rp} = F _p /L
1 top	3.2	0.1	0.20	1/10100	1.1	0.1	0.15	1/13500
2 middle	3.2	0.0			1.2	0.2		
3 bottom	3.0	0.1			1.0	0.3		

3.2. Repeated pressure test

50 cycles of negative and positive pressure P2 = 0.5 × P1= 200 Pa

Test Result:

No significant damage happened, and the sample door was still operable.

3.3. Windows and doors – Air permeability – Test method EN 1026 – after wind load

- Length of opening joints 5.860 m
- Overall area: 2.057 m²

Table 7

Air permeability at positive pressure	Test pressure step (Pa)	50	100	150	200	250	300	450	600
	Air permeability absolute (m ³ /h)		0.30	0.91	1.11	1.62	1.82	2.22	3.23
related to joints length (m ³ /hm)		0.05	0.16	0.19	0.28	0.31	0.38	0.55	0.95
related to overall area (m ³ /hm ²)		0.15	0.44	0.54	0.79	0.88	1.08	1.57	2.70

Table 8

Air permeability at negative pressure	Test pressure step (Pa)	50	100	150	200	250	300	450	600
	Air permeability absolute (m ³ /h)		0.51	0.81	1.31	1.52	2.53	2.73	13.34
related to joints length (m ³ /hm)		0.09	0.14	0.22	0.26	0.43	0.47	2.28	3.40
related to overall area (m ³ /hm ²)		0.25	0.39	0.64	0.74	1.23	1.33	6.48	9.67

Table 9

Average air permeability	Test pressure step (Pa)	50	100	150	200	250	300	450	600
	Air permeability absolute (m ³ /h)		0.40	0.86	1.21	1.57	2.17	2.48	8.28
related to joints length (m ³ /hm)		0.07	0.15	0.21	0.27	0.37	0.42	1.41	2.17
related to overall area (m ³ /hm ²)		0.20	0.42	0.59	0.76	1.06	1.20	4.03	6.19

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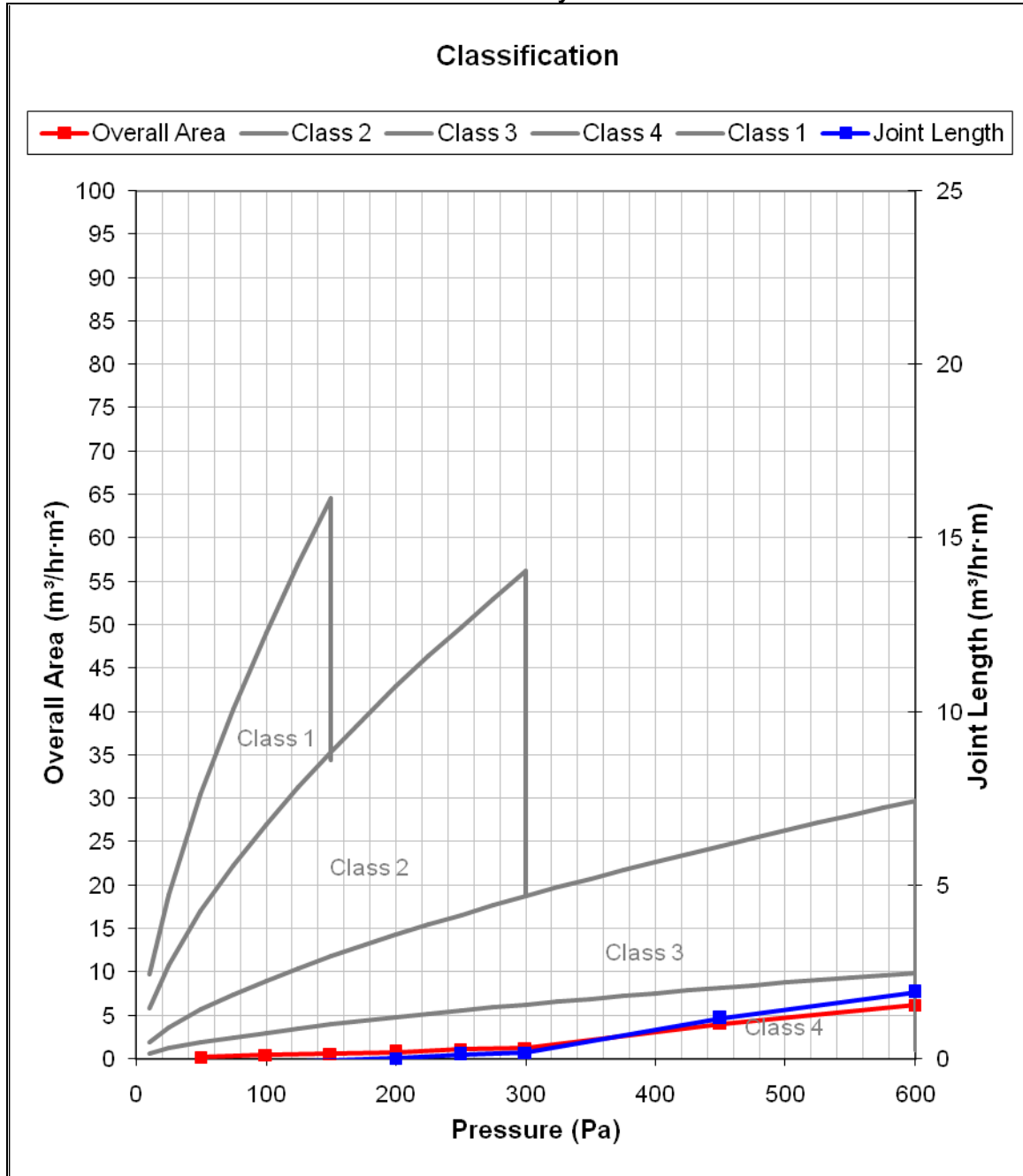
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Table 10

Reference air permeability at100 Pa related to joints length	Q100 = 0.15 m ³ /hm	
Reference air permeability at100 Pa related to overall area	Q100 = 0.42 m ³ /hm ²	
The requirement for maximum air permeability (120% of upper limit value) at 100 Pa for the given class – Class 4 (after wind load) related to joints length	0.90	m ³ /hm
The requirement for maximum air permeability (120% of upper limit value) at 100 Pa for the given class – Class 4 (after wind load) related to overall area	3.60	m ³ /hm

Chart 2 - Air Permeability after Wind load



3.4. Safety test

1 cycle including negative and positive test pressure $P_3 = 1.5 \times P_1 = 600 \text{ Pa}$

Test results:

The test specimen remained closed, without any visible damage and failure or detachment any parts of the test specimen. The operation of the moving parts was done without any difficulties.

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4. Thermal Transmittance Test – Test method EN ISO 12567-1

4.1. Diagrams of calibration measurements

Chart 3 - Thermal resistance of the surround panel

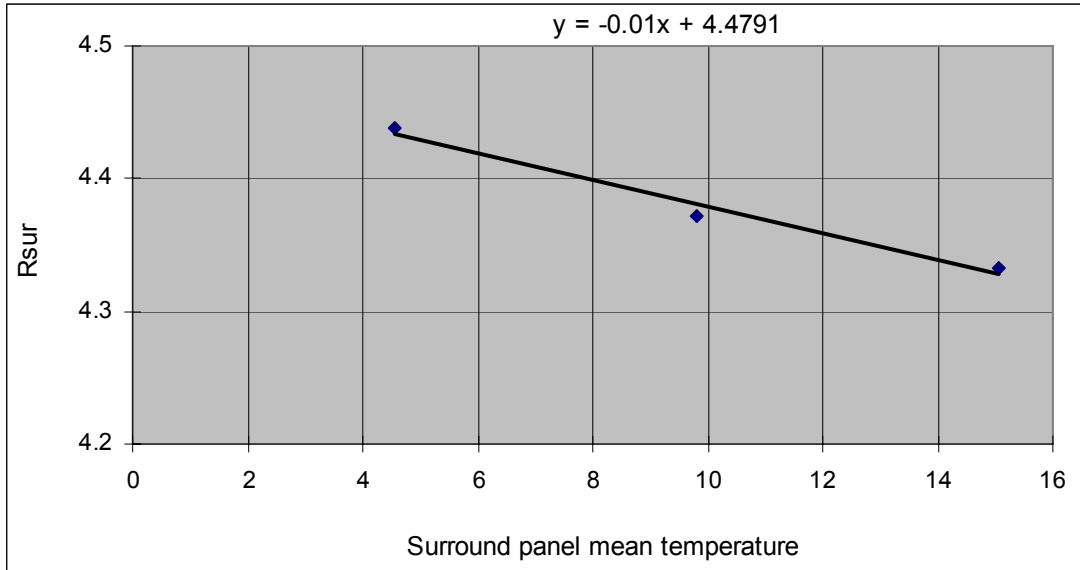


Chart 4 - Total surface resistance

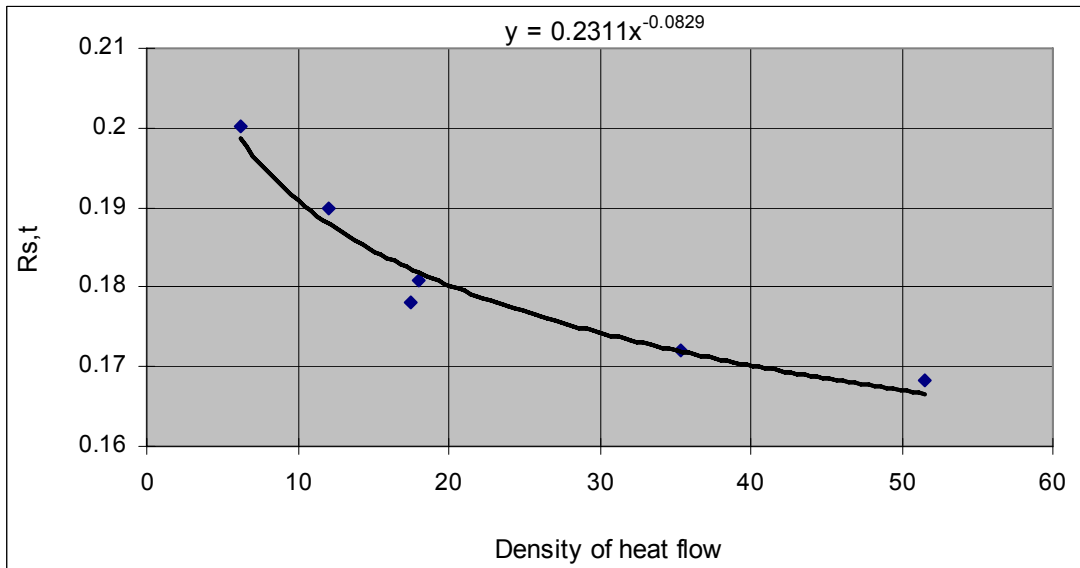


Chart 5 - Convective faction for warm side

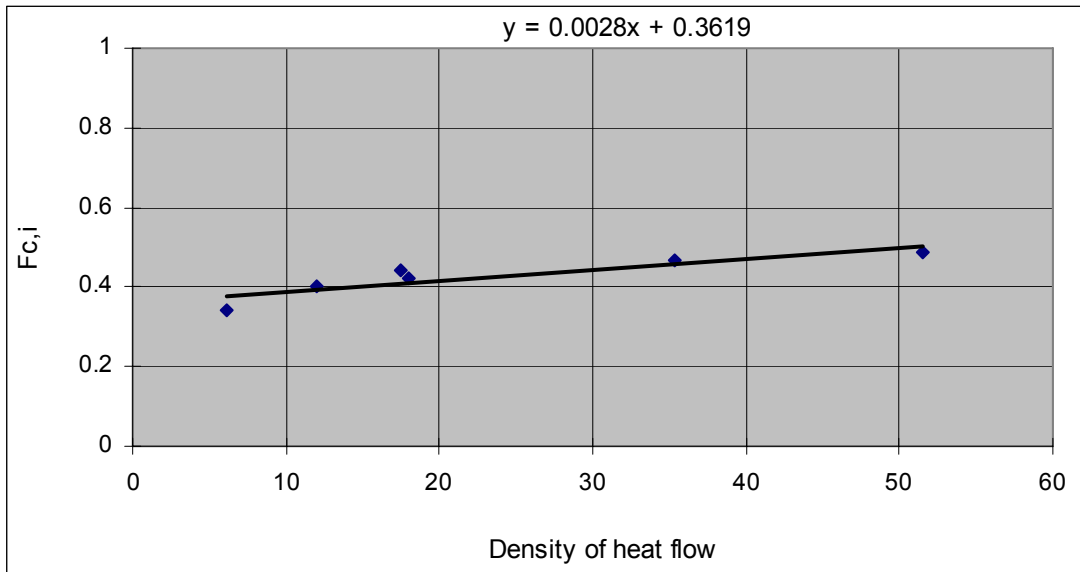
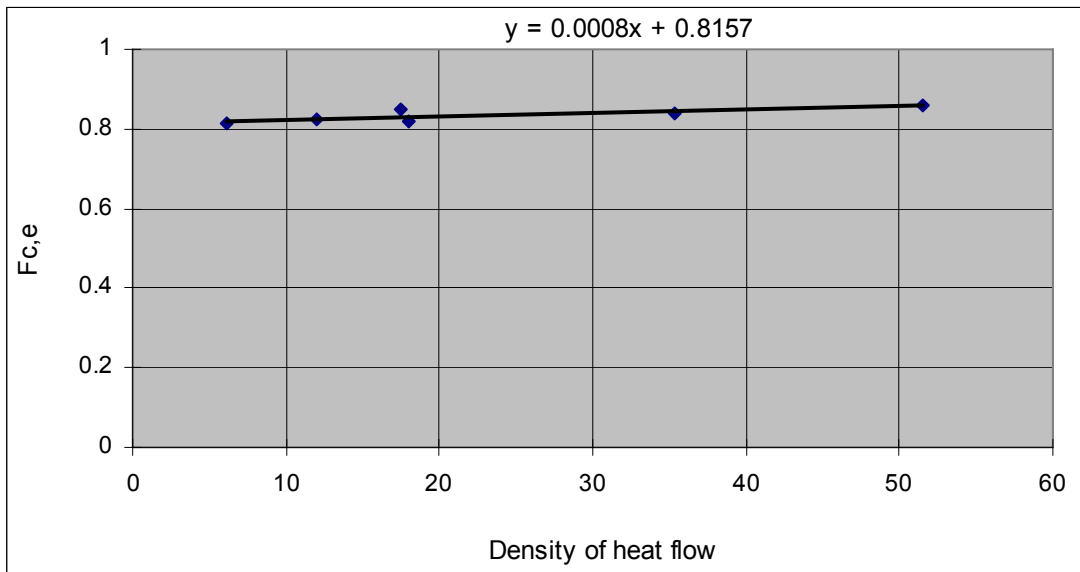


Chart 6 - Convection fraction for cold side



4.2. Measurements of Test Specimen

Table 11 - Door data

Data element			Value
w	frame width	m	0.105
d_{sur}	surround panel thickness	m	0.150
A_{sp}	area of door	m ²	2.05722
A_{sur}	area of surround panel	m ²	4.54278
L	perimeter length	m	6.136

Table 12 - Door measurement results

Data element			Value
Cold temperature (measured)			
θ_{ce}	(air)	°C	-0.13
$\theta_{se,b}$	(baffle)	°C	-0.09
$\theta_{se,p}$	(reveal)	°C	0.13
$\theta_{se,sur}$	(surround panel)	°C	0.2
Warm temperature (measured)			
θ_{ci}	(air)	°C	19.18
$\theta_{si,b}$	(baffle)	°C	18.42
$\theta_{si,sur}$	(surround panel)	°C	18.0
Φ_{in}	(input power in hot box)	W	83.23
v_i	(air flow warm, down)	m/s	0.07
v_e	(air flow cold, up)	m/s	2.97

Table 13 - Calculation of the thermal transmittance of the door

Data element			Value
$\theta_{me,sur}$	(mean temp. of surround panel)	°C	9.10
R_{sur}	(surround panel resistance)	m ² ·K/W	4.388
λ_{sur}	(conductivity of surround panel)	W/(m·K)	0.034
ψ_{edge}	for $w = 105 \text{ mm/d} = 45 \text{ mm}$	W/(m·K)	0.00355
$\Delta\theta_{s,sur}$	(temp. difference of surround panel)	K	17.30
$\Delta\theta_c$	(air temp. difference)	K	19.31
Φ_{in}	(input power in hot box)	W	83.23
Φ_{sur}	(surround panel heat flow)	W	17.91
Φ_{edge}	(edge zone heat flow)	W	0.42
q_{sp}	(heat flow density of specimen)	W/m ²	31.55
F_{ci}	(convective fraction - warm)	-	0.450

F_{ce}	(convective fraction - cold)	-	0.841
$R_{s,t}$	(total surface resistance)	$m^2 \cdot K/W$	0.174
θ_{ri}	(radiant temp. - warm)	$^{\circ}C$	18.42
θ_{re}	(radiant temp. - cold)	$^{\circ}C$	-0.09
θ_{ni}	(environmental temp. - hot)	$^{\circ}C$	18.76
θ_{ne}	(environmental temp. - cold)	$^{\circ}C$	-0.12
$\Delta\theta_n$	(environment temp. difference)	K	18.88
U_m	(measured)	$W/(m^2 \cdot K)$	1.671
ΔU_m	(uncertainty of the measurement)	$W/(m^2 \cdot K)$	± 0.113
$R_{(s,t),st}$		$(m^2 \cdot K)/W$	0.17
U_{st}	(standardized)	$W/(m^2 \cdot K)$	1.681
U_D	(door U-value)	$W/(m^2 \cdot K)$	1.681

*****End of Report*****