

Test report

REPORT NUMBER:
889196



**DANISH
TECHNOLOGICAL
INSTITUTE**

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CPR NB 1235

CLIENT: HansenConcepts
Bredgade 4
DK-6940 Lem

Page: 1 of 8
Appendices: 2
Init.: MFRI/MJLD/MMH

SPECIMEN: Outward opening window, further details can be found on page 2.

SAMPLING: The test material was forwarded by the client and received at the Danish Technological Institute on 2019-09-11. The test material was labelled "889196".

TEST PERIOD: The testing was carried out on 2019-09-17 until 2019-09-19.

METHOD: EN 14351-1:2006 Windows and doors – Product standard, performance characteristics -
+A2:2016: Part 1: Windows and external pedestrian doorsets.
EN 1026:2016: Windows and doors – Air permeability – Test method
EN 1027:2016: Windows and doors – Watertightness – Test method
EN 12211:2016 Windows and doors – Resistance to wind load – Test method


RESULTS: Classification of the test specimen according to EN 14351-1 4.2, 4.5 and 4.14 and the standards mentioned below:
Air permeability: **Class 4** at ± 600 Pa
EN 12207 - Windows and doors Air permeability - Classification
Watertightness: **Class E1200** (1200 Pa)
EN 12208 - Windows and doors - Watertightness - Classification
Wind load: **Class C5**
EN 12210 - Windows and doors – Resistance to wind load – Classification

The results of the test are given on page 3-8.


STORAGE: The sample is returned to the client.

TERMS: The test has been performed according to the conditions laid down by DANAK (The Danish Accreditation), cf. www.danak.dk, and the general terms and conditions of The Danish Technological Institute. The results from DTI's work in this report, i.e. analyses, assessments and instructions may only be used or reported in their entirety. The customer may not mention or refer to DTI or DTI's employees for advertising or marketing purposes unless the DTI has granted its written consent in each case.

LOCATION: 2019-09-26, Danish Technological Institute, Building & Construction, Aarhus.


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 **DANAK**
Test Reg. No. 2

Description of test specimen

The test specimen consists of an outward opening top-guided window, made of aluminium-profiles of the system Millennium, see drawings in Appendix 1.

Before delivery a subframe was prepared and mounted around the element by the client. The subframe does not hinder the normal functioning of the element. The test conditions and the dimensions of the test specimen are measured by the laboratory and are given in the table below.

Closing condition, according to EN 12519 Windows and pedestrian doors - Terminology, during test: Fastened.

Width [mm]	Height [mm]	Area [m ²]	Length of joint [m]	Temperature [°C]	Relative humidity [%]	Atmospheric pressure [hPa]
1500	2000	3.0	6.74	22.1	42.4	1005.8

The client has provided the following information about the construction of the test specimen:

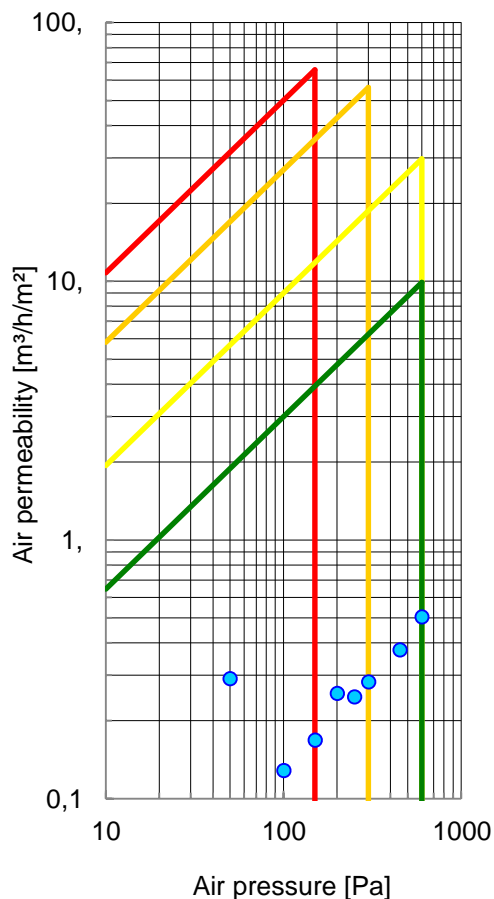
Product name	Millennium Udadgående
Width x height	1500 x 2000 mm
Gaskets	See appendix 1
Hardware	Hinge HXTH22-2, other hardware Roto NT
IGU	48 mm (4/18/4/18/4)



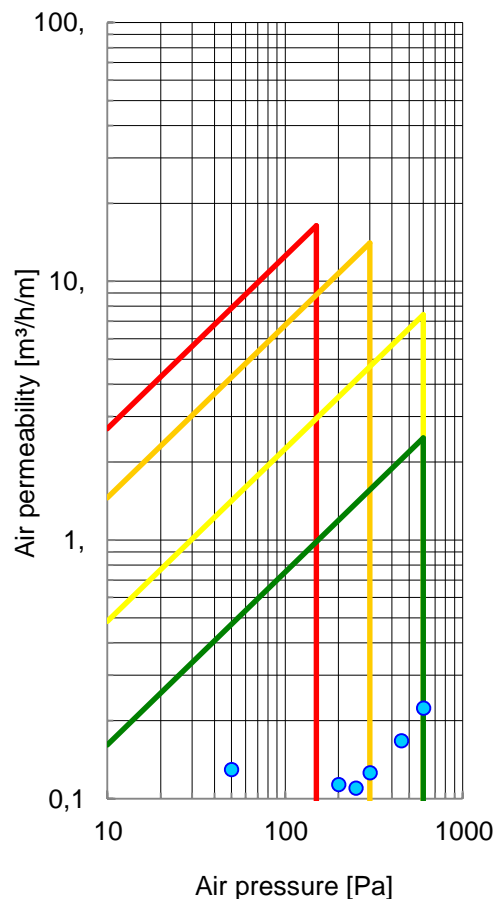
Test specimen during testing

Test results – Air permeability – Positive air pressure

Air pressure [Pa]	Air flow Total [m ³ /h]	Air flow Area [m ³ /h/m ²]	Air flow Length of joint [m ³ /h/m]	Class Area [-]	Class Length of joint [-]
50	0.87	0.29	0.13	4	4
100	0.39	0.13	0.06	4	4
150	0.50	0.17	0.07	4	4
200	0.76	0.25	0.11	4	4
250	0.74	0.25	0.11	4	4
300	0.85	0.28	0.13	4	4
450	1.13	0.38	0.17	4	4
600	1.51	0.50	0.22	4	4



Air permeability related to area.

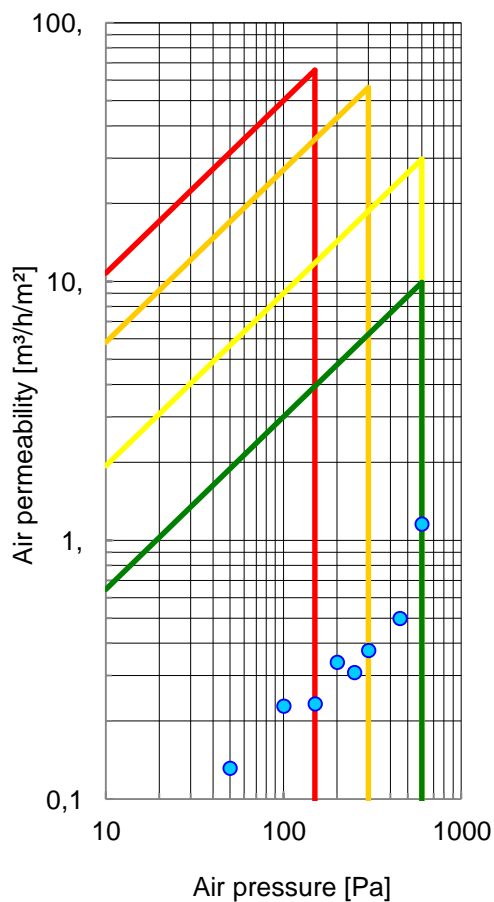


Air permeability related to length of joint.

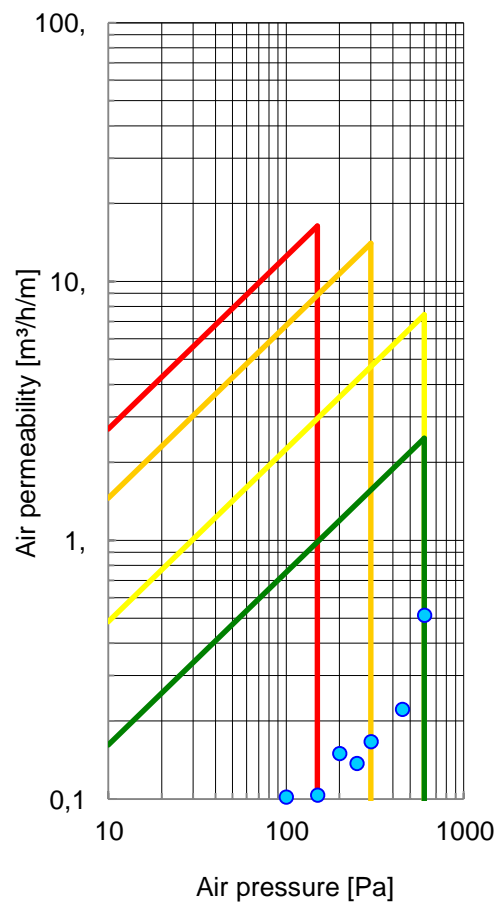
The graphs show the classification in relation to the area and the length of joint. Classes 1-4 are indicated by red, orange, yellow and green fields respectively.

Test results – Air permeability – Negative air pressure

Air pressure [Pa]	Air flow Total [m ³ /h]	Air flow Area [m ³ /h/m ²]	Air flow Length of joint [m ³ /h/m]	Class Area [-]	Class Length of joint [-]
50	0.39	0.13	0.06	4	4
100	0.68	0.23	0.10	4	4
150	0.70	0.23	0.10	4	4
200	1.01	0.34	0.15	4	4
250	0.92	0.31	0.14	4	4
300	1.12	0.37	0.17	4	4
450	1.49	0.50	0.22	4	4
600	3.45	1.15	0.51	4	4



Air permeability related to area.

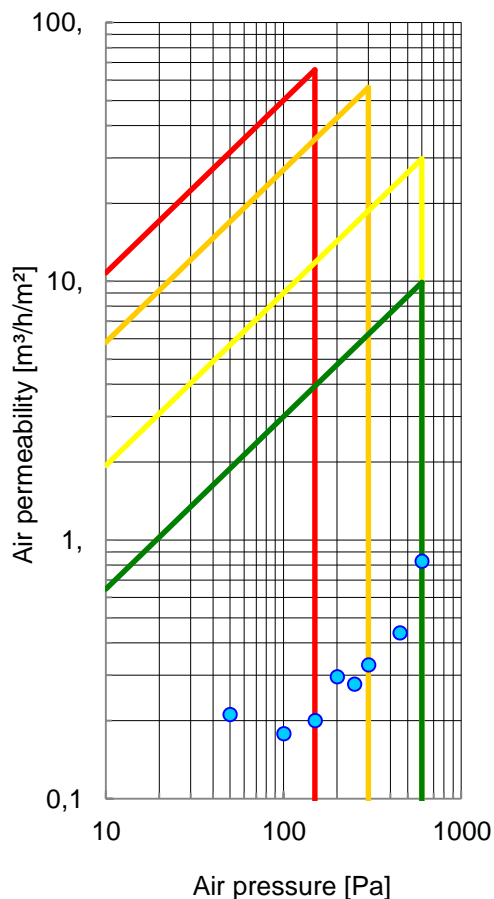


Air permeability related to length of joint.

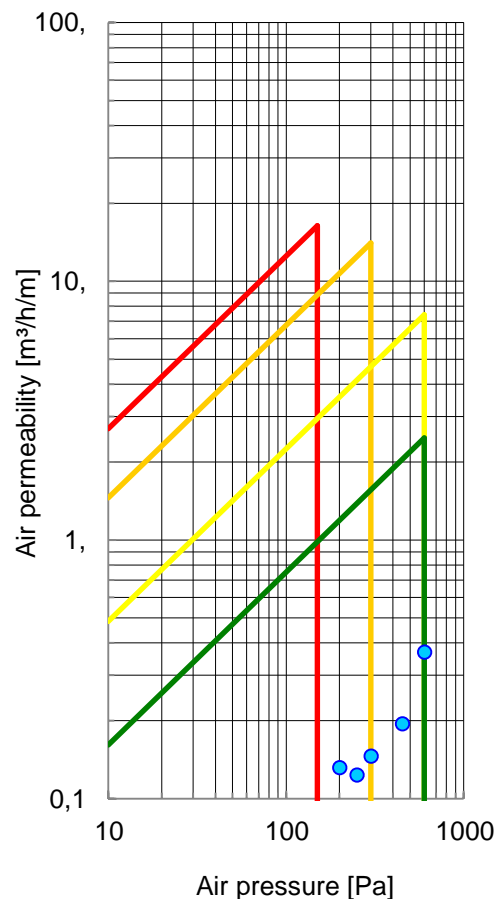
The graphs show the classification in relation to the area and the length of joint.
Classes 1-4 are indicated by red, orange, yellow and green fields respectively.

Test results – Average air permeability

Air pressure [Pa]	Air flow Total [m ³ /h]	Air flow Area [m ³ /h/m ²]	Air flow Length of joint [m ³ /h/m]	Class Area [-]	Class Length of joint [-]
50	0.63	0.21	0.09	4	4
100	0.53	0.18	0.08	4	4
150	0.60	0.20	0.09	4	4
200	0.89	0.30	0.13	4	4
250	0.83	0.28	0.12	4	4
300	0.98	0.33	0.15	4	4
450	1.31	0.44	0.19	4	4
600	2.48	0.83	0.37	4	4



Air permeability related to area.



Air permeability related to length of joint.

The graphs show the classification in relation to the area and the length of joint. Classes 1-4 are indicated by red, orange, yellow and green fields respectively.

Test results – Watertightness

Air pressure [Pa]	Duration [min]	Observations [-]	Class [-]
0	15	No water penetration	1A
50	5	No water penetration	2A
100	5	No water penetration	3A
150	5	No water penetration	4A
200	5	No water penetration	5A
250	5	No water penetration	6A
300	5	No water penetration	7A
450	5	No water penetration	8A
600	5	No water penetration	9A
750	5	No water penetration	E750
900	5	No water penetration	E900
1050	5	No water penetration	E1050
1200	5	No water penetration	E1200



Test specimen during testing

Test results – Wind load

Deflection test

Air pressure - P1	Displacement		Relative frontal deflection		Class
	Positive pressure	Negative pressure	Positive pressure	Negative pressure	
[Pa]	[mm]	[mm]	[-]	[-]	[-]
± 2000 Pa	0.5	2.3	1/3760	1/836	C5



The red circles indicate the displacement measuring points

Pulsating air pressure test

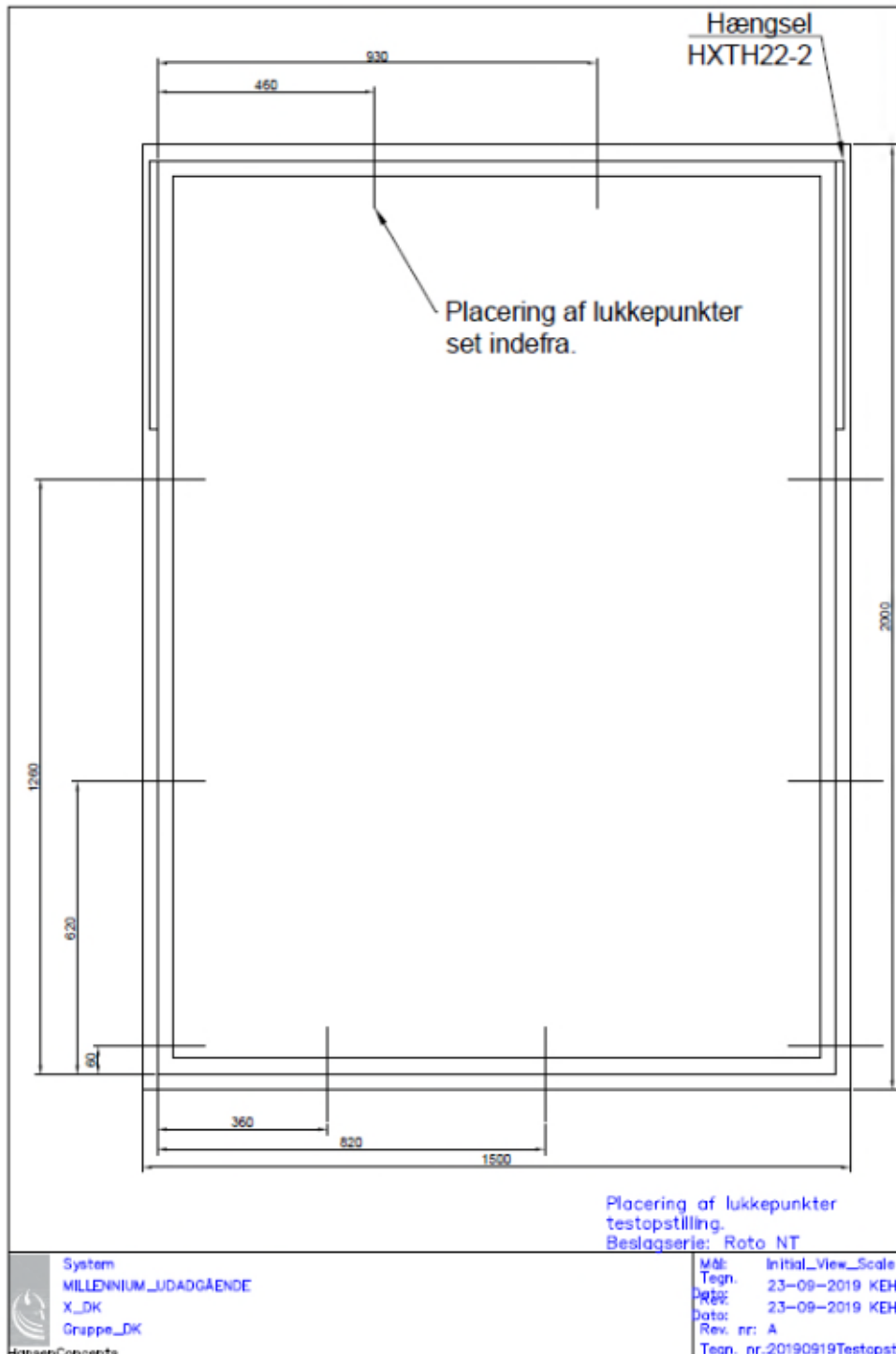
Air pressure - P2 [Pa]	Observations during testing [-]
± 1000 Pa	The specimen remained closed and no damage or operating defects were observed.

Air permeability test

Air pressure [Pa]	Classification					
	Positive pressure		Negative pressure		Average	
	Area [-]	Length of joint [-]	Area [-]	Length of joint [-]	Area [-]	Length of joint [-]
50	4	4	4	4	4	4
100	4	4	4	4	4	4
150	4	4	4	4	4	4
200	4	4	4	4	4	4
250	4	4	4	4	4	4
300	4	4	4	4	4	4
450	4	4	4	4	4	4
600	4	4	4	4	4	4

Safety test

Air pressure - P3 [Pa]	Observations during testing [-]
± 3000 Pa	The specimen remained closed and no damage or operating defects were observed.



Position of locking points

The general conditions pertaining to assignments accepted by Danish Technological Institute shall apply in full to the technical testing or calibration at Danish Technological Institute and to the completion of test reports or calibration certificates within the relevant field.

Construction Product Regulation:

The Danish Technological Institute guarantees that employees carrying out tests to be used together with harmonized standards under notification no. 1235 according to EU regulation 305/2011. article 43. satisfy all the requirements made for capability. integrity and impartiality. You find the CPR here: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:088:0005:0043:EN:PDF>

September 2017