

# Air Leakage Test Report

In compliance with CAN/CGSB 149.10 (2019)


Mr. Peg Property Inspections Inc.

Building Address: 1234 Main St. Winnipeg, MB Canada R01 0A1

Performed for:

Performed by: Mr. Peg  
Test date: 2021-09-24  
Associated Test file: CGSB2019 2021-09-24 1101  
Report Number: 12345  
Unique Property ID Number:

## Summary

 <b>FanTestic</b>	version: <b>5.12.31</b>	licensed to: <b>Mr. Peg Property Inspections Inc.</b>
Test date: <b>2021-09-24</b>	By: <b>Mr. Peg</b>	
Customer:		
Building Lot Number:		
Building address:	<b>1234 Main St. Winnipeg, MB Canada R01 0A1</b>	

<b>Building and Test Information</b>	
Test file name:	<b>CGSB2019 2021-09-24 1101</b>
Building volume [m <sup>3</sup> ]:	<b>650</b>
Envelope Area [m <sup>2</sup> ]:	<b>2,000</b>
Floor Area [m <sup>2</sup> ]:	<b>600</b>
Building Height (from ground to top) [m]:	<b>8</b>

<b>Results</b>	
Corrected flow at 50 Pa, [L/s]	<b>3233.5</b>
Air changes per hour at 50 Pa [1/h]	<b>17.91</b>
Corrected flow at 10 Pa, [L/s]	<b>1616.5</b>
Equivalent leakage area at 10 Pa [cm <sup>2</sup> ]	<b>4890</b>
Effective leakage area at 4 Pa [cm <sup>2</sup> ]	<b>2980</b>
Permeability at 50 Pa, [L/s/m <sup>2</sup> ]	<b>1.6168</b>
Specific Leakage Rate at 50 Pa, [L/s/m <sup>2</sup> ]	<b>5.389</b>
Normalized Leakage Area [cm <sup>2</sup> /m <sup>2</sup> ]	<b>2.44</b>

## Compliance

- \* **Set 1 Slope below 0.5 generally means test is invalid.**
- \* **Set 1 One or more of the test parameters is not valid.**
- \* **Set 1 (Slope n is not in compliance.**

## Assumptions and warnings

While FanTestic software may calculate air leakage results based on user input, use of this software does not in any way guarantee these results.

## Building Information

### Building Measurements

Building Volume [m<sup>3</sup>]: 650  
Envelope Area (A<sub>E</sub>) [m<sup>2</sup>]: 2,000  
Floor Area (A<sub>F</sub>) [m<sup>2</sup>]: 600  
Building Height (from ground to top) [m]: 8

### Heating/Ventilation System

HVAC Systems Present:

### Pictures

## Test Method

Set-up Conditions:

## Openings and Temporary Sealing

Deviations from the test method:

## Discussion of Results

Combined Test Data (Tested in one direction only)

	Results	Uncertainty
Corrected flow at 50 Pa, [L/s]	3233.5	+/-0.2%
Air changes per hour at 50 Pa [1/h]:	17.91	+/-0.5%
Corrected flow at 10 Pa, [L/s]	1616.5	+/-0.2%
Equivalent leakage area at 10 Pa [cm <sup>2</sup> ]	4890	+/-0.5%
Effective leakage area at 4 Pa [cm <sup>2</sup> ]	2980	+/-0.9%
Permeability at 50 Pa, [L/s/m <sup>2</sup> ]	1.6168	+/-0.2%

Specific Leakage Rate at 50 Pa, [L/s/m <sup>2</sup> ]	5.389	+/-0.2%
Normalized Leakage Area [cm <sup>2</sup> /m <sup>2</sup> ]:	2.44	

## Air Leakage Test Data Appendix–

### Depressurize Data Set

Test Dataset Date:

Start time:

Sample Report only.

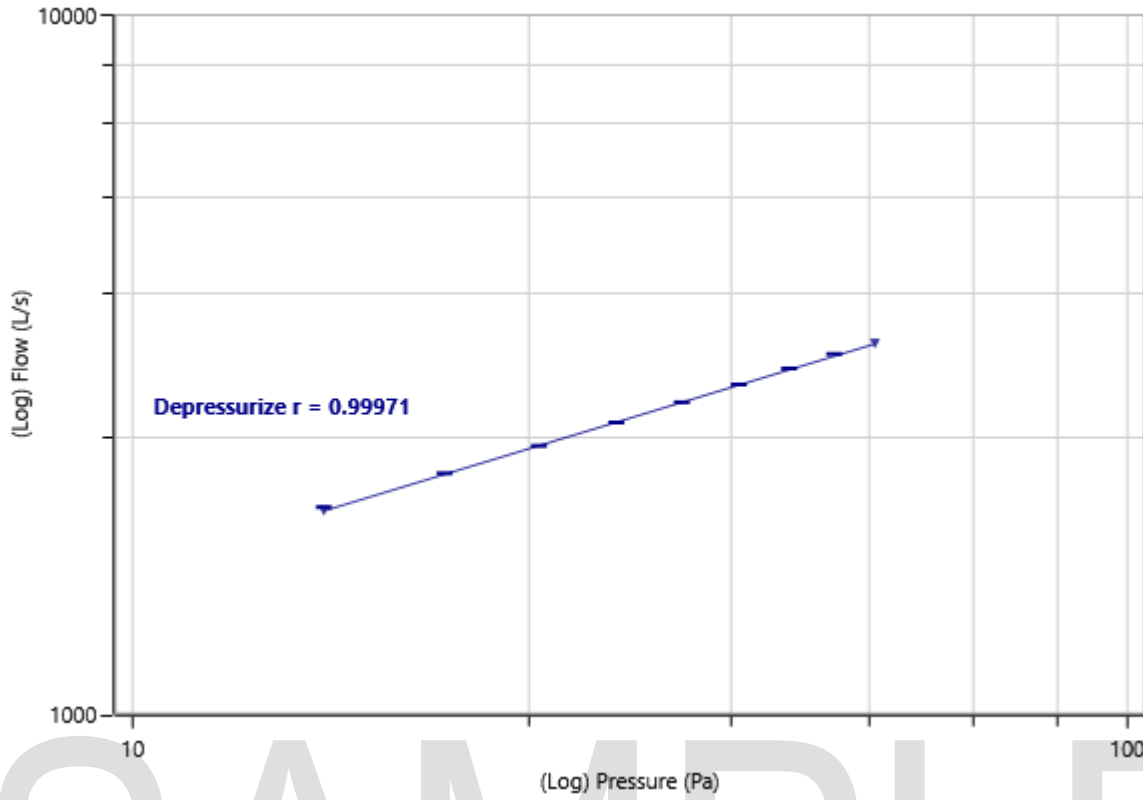
Environmental Conditions		
Wind speed:	10	from the
Wind variability:		
Operator Location:	Inside the building	
Initial Bias Pressure:	1.00 Pa	
Final Bias Pressure:	0.00 Pa	
Average Bias Pressure:	0.5 Pa	
Initial Temperature:	indoors: 20 C	outdoors: 20 C
Final Temperature:	indoors: 20 C	outdoors: 20 C
Barometric Pressure	101.325 kPa	from Standard temp/pressure

Test Analysis		
Correlation coefficient, r:	0.99971	
Slope, n:	0.431	
Intercept, C <sub>r</sub> [L/s/Pa <sup>n</sup> ]:	603.45	
	Results	Error
Corrected flow at 50 Pa, [L/s]	3233.5	+/-0.2%
Air changes per hour at 50 Pa [1/h]:	17.91	+/-0.2%
Corrected flow at 10 Pa, [L/s]	1616.4	+/-0.5%
Equivalent leakage area at 10 Pa [cm <sup>2</sup> ]	4889	+/-0.5%
Effective leakage area at 4 Pa [cm <sup>2</sup> ]	2982	+/-0.9%
Permeability at 50 Pa, [L/s/m <sup>2</sup> ]	1.6168	+/-0.2%
Specific Leakage Rate at 50 Pa, [L/s/m <sup>2</sup> ]	5.3892	+/-0.2%
Normalized Leakage Area [cm <sup>2</sup> /m <sup>2</sup> ]:	2.44	+/-0.5%

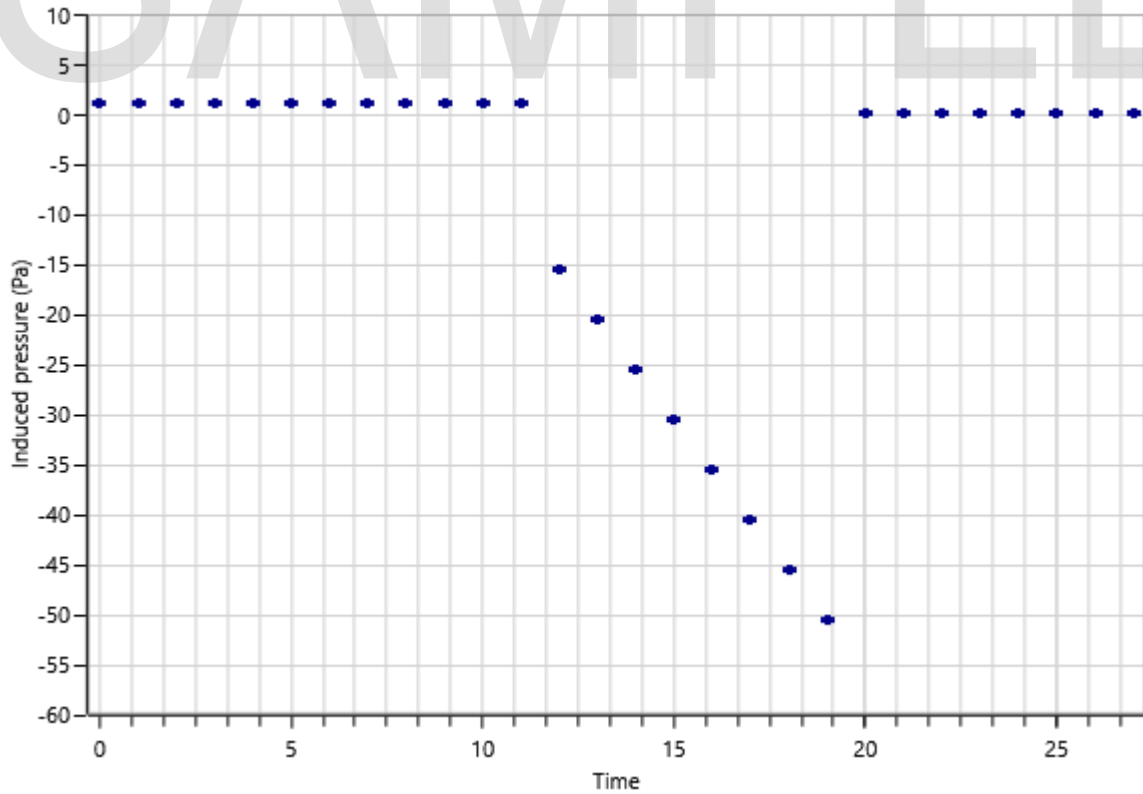
Measured pressure [Pa]		-15.0	-20.0	-25.0	-30.0	-35.0	-40.0	-45.0	-50.0
Induced Pressure [Pa]		-15.5	-20.5	-25.5	-30.5	-35.5	-40.5	-45.5	-50.5



### Flow vs Induced Pressure (Depressurize Set)



### Building Gauge Pressure (Depressurize Set)



## Test Equipment

The following test equipment was used in the performance of the air leakage tests.

	Fan	Fan serial	Fan location	Gauge	Gauge serial	Gauge Calibration
#1	Retrotec 5000	1234	Winnipeg	DM32	1234	

### Fan Calibration Certificate Retrotec 5000:

Retrotec 5000 1234 Fan last calibrated: (Flow Equation Parameters - 1234B1) . Published Flow Equation Parameters, Round B1. CFM								
Range	n	K	K1	K2	K3	K4	MF	
Open	0.498	548	0	0.3	0	1	10	
A	0.502	287	0	0.4	0	1	20	
B8	0.54	113.25	0	0.7	0	1	40	
Polynomial Range	g	f	a	b	c	d	K2	MF
B4	29	-0.19	0.000007943	-0.00864	4.9	206	0.8	40
B2	30	0.1	0.00000088	-0.0029	2.15	90	1	50
B1	30	0	0.0000005	-0.00128	1.02	54	1	60
B74	25	0.15	0.000000796	-0.00095	0.59	18	0.8	35
B47	25	0.09	0.000000269	-0.0003591	0.2435	12.05	1	50
B29	25	-0.02	0.000000111	-0.000149	0.092	4.4	0.6	50

Fan Pressure (FP) is the measured fan pressure when using a self-referenced fan or when Room Pressure (RP) is negative. If using a fan which is not self-referenced, and Room Pressure is positive, Fan Pressure is calculated by subtracting the measured Room Pressure from the Absolute Value of the Fan Pressure.

If  $PrA > 0$  and fan is not self-referencing:  $FP = |PrB| - PrA$

If  $PrA < 0$  or fan is self-referencing:  $FP = PrB$

Flow calculations are not valid if Fan Pressure is less than either MF or  $(K2 \times |RP|)$ .

Flow in CFM using the above coefficients is calculated as follows for standard Ranges:

$$flow = (FP - (|RP| \times K1))^N + (K + (K3 \times FP))$$

Flow in CFM using the above polynomial coefficients is calculated as follows:

$$flow = (a \times FP^3) + (b \times FP^2) + (c \times FP) + d + ((g - |RP|) \times f)$$