

Doncaster Building Control Air Leakage Test Report



Location of Dwelling:

1 Sample Street
Doncaster
South Yorkshire
England
DN1 1UB

Client : Mr Example

Air Test Reference No. 09/0001

BINDT Certificate No. 00000

DMBC Application No. 09/01234/DOM

Issue Date : 1/01/09

Carried out By: Matthew Fletcher
BINDT Tester No. : 0227

Doncaster Building Control
2nd Floor Danum House
St Sepulchre Gate
Doncaster
DN1 1UB
Tel : 01302 734848
Fax : 01302 734902
E-mail : Building.Control@doncaster.gov.uk
Website : www.doncaster.gov.uk/airtesting



1.0 Introduction

This test report relates to the air tightness testing carried out by Doncaster Building Control at:

1 Sample Street
Doncaster
South Yorkshire
England
DN1 1UB

The estimated year of construction is 2009

The type of heating/ventilation system installed is (ATTMA): Dwelling – naturally ventilated

The test was carried out on 1/01/09, at 09:30

The test was commissioned by Mr Example

The specified building air permeability performance criteria as defined in Section 1 of the Building Regulations 2000 (as amended), Part L1A Conservation of Fuel and Power in New Dwellings was $9.0 \text{ m}^3/\text{h}/\text{m}^2$

2.0 Summary of Test Conditions and Results

Weather conditions during test – Sunny

The envelope area for air permeability performance criteria is defined as the area of external walls plus the area of the roof and ground floor.

The envelope area was calculated by Matthew Fletcher.

The entire area of the building was to be tested.

The Envelope Area (A^E) 287 m^2

The Net Floor Area (A^F) 85 m^2

The Volume (V) 325 m^3

Following the air permeability testing the air leakage rate determined at 50 Pa. is $8.1 \text{ m}^3/\text{h}/\text{m}^2$

The test area therefore PASSED the specified air permeability performance criteria. The BINDT certificate is enclosed and should be passed to the Building Control Body within 7 days

2.1 Openings and Temporary Sealing

Detail	Response
All external doors and windows closed (but not sealed)	Y
All internal doors open	Y
All extracts sealed (check kitchen and bathroom(s) extracts and the oven hood)	Y
All drainage traps filled with water (check all toilet sinks)	Y
Combustion appliances turned off (if inside the conditioned space of the dwelling. Temporary seal air supply / flue.	Y
Trickle vents to be closed (Do not seal)	Y
Fireplace temporary sealed.	Y
All building works completed to the air boundary envelope, any missing items note below along with action taken (i.e. no action taken or temp sealed with tape etc.):	Y
List <u>all</u> temporary seals in place	Photo taken Y / N
Extractor fan to GF WC	Y
Extractor fan to bathroom	Y
Kitchen Extractor	Y
En-suite	Y
Fire place opening	Y

2.2 Test Method

The envelope air tightness test was carried out in accordance with the following standards:-

- ATTMA TS1 Issue 2 – Measuring Air Permeability of Building Envelopes
- BS EN 13829:2001 Thermal Performance of Buildings – Determination of air permeability of building.
- BINDT – Quality Procedures and Explanatory Notes for Air Tightness Testing.

The purpose of the test was **METHOD B** (building envelope) as stated in BS EN 13829:2001. This requires that all adjustable openings shall be closed and remaining intentional openings are sealed.

The building was depressurised using a RETROTEC Q46 Fan System. The Retrotec Q46 fan system comprises of a portable fan capable of supplying 9'514m³/hr at 50 Pascal's. The fan system is calibrated by a UKAS accredited company in accordance with ATTMA TS1 issue 2 requirements.

The fan was set up in the **front door** with the tester in the room.

Pressure differences across the Retrotec fan and the building were measured using a digital manometer (Retrotec DM-2A) at the start, during and the end of the test. All equipment used is calibrated to UKAS standards annually.

Air temperatures were measured using a KM330 Digital Thermometer and K Type probe. Measurements were taken at the start and end of test. The probes were located on each floor of the dwelling and externally.

Wind speeds at the start and end of the test were measured using Kaindl Windtronic 2 anemometer.

Barometric pressure readings were taken using a Fisher Scientific Barometer.

2.3 Summary of Equipment used and the Re-calibration dates

Equipment Type - Certificate # 4034	Serial No.s	Calibration expiry date
Retrotec 2200 Fan	S01929	18/03/10
Retrotec DM-2A Manometer	200087 A / B	19/03/10
KM330 Digital Thermometer and K Type probe	800677	06/03/10
Fisher Scientific Barometer FB70245	80662992	19/03/10
Kaindl Windtronic 2 Anemometer	N/A	N/A

3.0 Test Data / Results

Any deviations from Testing in accordance with ATTMA TS1 – **NO DEVIATIONS**

Environmental Conditions

		Before			After
Barometric Pressure		102300 Pa			102200 Pa
Wind Speed		0m/s			0m/s
Inside Temperature		24 °C			24 °C
Outside Temperature		21 °C			21 °C
Static Pressure	P01+	0.0 Pa		P02+	0.0 Pa
	P01-	-1.01 Pa		P02-	-0.88 Pa
	P01	-1.01 Pa		P02	-0.88 Pa

Baseline static pressure measured before test.

-1.05	-1.05	-0.97	-1.0	-0.99
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Baseline static pressure measured after test.

-1.05	-0.85	-0.81	-0.82	-0.89
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Fan Flow Data

Fan Range – A

Room Pressure (Pa):	-50	-45	-40	-55	-60	-65	-70
Corrected Room Pr (Pa):	49.03	44.03	39.03	54.03	59.03	64.03	69.03
Flow Pressure (Pa):	79	68	59.50	85	97	105	120
Corrected Flow Pr (Pa):	79.5	68.7	60.4	85.4	97.2	105.1	120.1
Measured Flow (m³/h):	4023.5	3565.8	3340.7	3978.3	4249.3	4420.9	4732.5
Best Fit Flow (m³/h):	3838.9	3607.1	3363.9	4060.9	4274.4	4480.4	4679.7
Error (%):	4.6	-1.2	-7	-2.1	-6	-1.3	1.1

3.1 Data Analysis

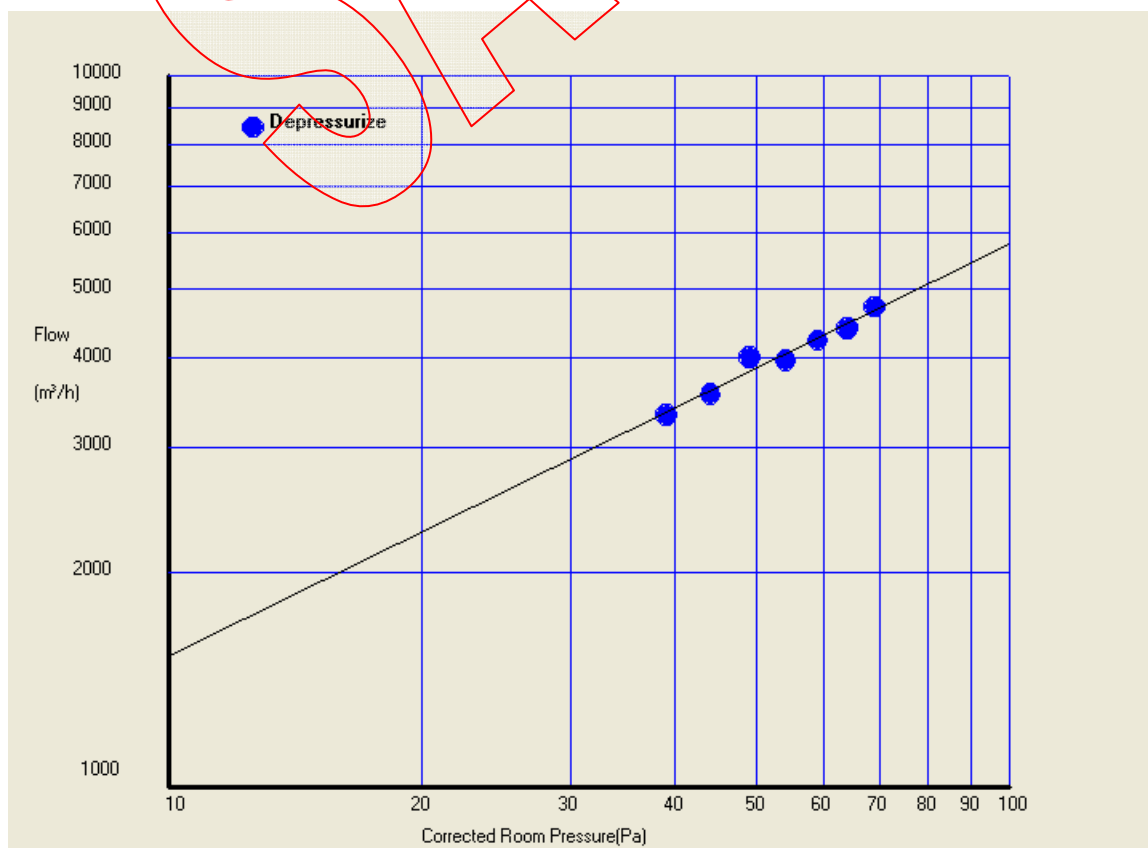
	Slope (n)	Intercept (C)	Correlation (r²)
Best Fit: Least Squares		(m³/h)	
Depressurize	0.654	403.2606	99.9

3.2 Results

	Units	Depressurize
Air Flow Coefficient, CL	(m³/h)	403.261
Air Flow Coefficient, Cenv	(m³/h)	403.613
Air flow Exponent		0.5789
Correlation Coefficient, r²	(%)	99.9
Flow@ 50 Pa	(m³/h)	3882.81
Air Changes/Hour @ 50 Pa	(/hr)	9.136
Air Permeability@ 50 Pa	(m³/h/m²)	8.1
Specific Leakage Rate @ 50 Pa	(m³/h/m²)	45.68

Door Fan 3.0 Enclosure Leakage Analysis Software (Version 3.251)
By: Retrotec Energy Innovations Ltd (Canada).
Copyright 2006-2007, Retrotec Energy Innovations Ltd
This software conforms to the ATTMA: TS-1 testing standard

Graph plotting the pressure differential to airflow



Supporting photos of the Temporary Sealing

Seal to ground floor WC Extractor Fan



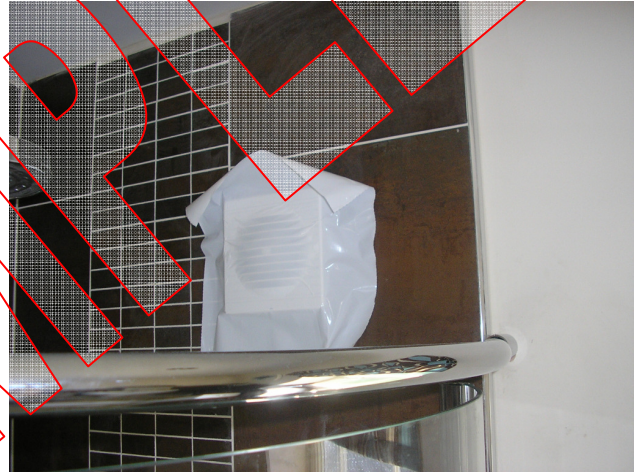
Seal to Bathroom Extractor Fan



Seal to Kitchen Extractor fan



Seal to en-suite extractor fan



Seals to Living room fire place



Photos showing weakness in the air barrier

Although the dwelling passed the Air Tightness Test the following areas identified weakness in the barrier and it is advisable to carry out remedial works

Requires mastic seal between the skirting board and wall/floor



Requires mastic sealing around the pipe as it penetrates through the floor



Poorly sealed void behind radiator panel in bedroom
Requires resealing



Poorly fitted trickle vent to UPVC window



Requires mastic sealing around pipes as they penetrate the floor in the bathroom.



Poorly fitted loft hatch cover

