

Technical Report

Report No 09/0904



2223



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Testing Conducted by: Wintech Engineering Ltd
Halesfield 2
Telford
Shropshire
TF7 4QH

Test Conducted at: Above Address

Test Conducted for: Dungannon Window Company Ltd

Standard Specified: BS EN 12207:2000 and BS EN 1026: 2000, as per the following
Method Statement; EW/09/0838/09152 - issued 9th April 2009

Project No: 09152

Date of Test Sequence: 16th April 2009

Product Tested: 'Eurosash' Vertical Slider

Tests Performed: As Listed in Section 5 – Test Procedures

Testing Conducted by: D Potts

Report Compiled by:

E Watkin
Department Manager

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Technical Approval:
(Authorising Signatory)

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Quality/Technical Manager

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1. INTRODUCTION

This report describes tests conducted at the test laboratory of Wintech Engineering Ltd to a window sample on behalf of Dungannon Window Company Ltd

The test sequence was conducted on the 16th April 2009 in order to determine the weather tightness of the sample with respect to air permeability. The test methods were in accordance with the following standards as per the request of Dungannon Window Company Ltd.

Windows & Doors, Air Permeability test method
Windows & Doors, Air Permeability classification

BS EN 1026: 2000
BS EN 12207: 2000

Testing was conducted in accordance with Method Statement EW/09/0838/09152 issued by Wintech Engineering Ltd on 9th April 2009.

Wintech Engineering Ltd is accredited by the United Kingdom Accreditation Service as UKAS Testing Laboratory No. 2223.

The test sample was supplied fixed to a timber sub-frame by Dungannon Window Company Ltd and was mounted onto the test chamber by Wintech Engineering Ltd.

2. SUMMARY OF TEST RESULTS

The following summarises the results of testing carried out, but due to no repeat air permeability tests being conducted as required in a full test sequence in accordance with BS 6375 part 1:2004, the classification shown is based solely on the initial air permeability results only.

	<i>Test Method & Classification Standard</i>	<i>Achieved Max. Test Pressure</i>	<i>Classification</i>
Air Permeability	BS EN 1026: 2000 BS EN 12207: 2000	600 Pa (Positive)	Class 3

More comprehensive details are reported in Section 6.

These results are valid only for the conditions under which the test was conducted

All measurement devices, instruments and other relevant equipment were calibrated and traceable to National Standards.

Test Sample during Testing

Photograph No. 1



4. TEST ARRANGEMENT

4.1 TEST CHAMBER

A window specimen, supplied for testing in accordance with the relevant British & European Standards, was mounted into a rigid test chamber. The pressure within the chamber was controlled by means of a centrifugal fan and a system of ducting and valves. The static pressure difference between the outside and inside of the chamber being measured by means of a liquid manometer.

4.2 INSTRUMENTATION

4.2.1 Static Pressure

A liquid manometer capable of measuring rapid changes in pressure to an accuracy within 2%, was used to measure the pressure differential across the sample.

4.2.2 Air Flow

An air flow meter, mounted in the air system ducting was used to measure the airflow required to obtain pressures within the test chamber. The system has the capability of measuring airflow through the sample to an accuracy of $\pm 5\%$.

4.2.3 Temperature

A digital thermometer with an accuracy within $\pm 1^\circ \text{K}$ was used for temperature readings.

4.3 PRESSURE GENERATION

4.3.1 Static Air Pressure

The air supply system comprised of a centrifugal fan assembly and associated ducting and control valves and was used to create both positive and negative static pressure differentials. The fan provided a constant airflow at the required pressure and period required for the tests.

Note: References are made to both positive and negative pressures in this document, it should be noted that in these instances, positive pressure is when pressure on the weather face of the sample is greater than that on the inside face and vice versa.

5. TEST PROCEDURES

5.1 SEQUENCE OF TESTING

1. Air Permeability – Infiltration
2. Air Permeability – Exfiltration

Note: Prior to all testing the sample was conditioned for at least 4 hours at between 10 – 30°C & 25 – 75% RH, as required by the relevant testing standards.

5.2 AIR PERMEABILITY - Infiltration

Three (3) preparatory pulses of **660 Pa** positive pressure were applied to the test sample and any opening lights opened and closed at least once.

The test results were determined by measuring the rate of air flow through the test chamber whilst subjecting the sample to positive pressure differentials as follows: **50, 100, 150, 200, 250, 300, 450 and 600 Pa**, each step being held for at least 10 seconds.

Leakage through the test chamber and joints between the chamber and test sample was determined by sealing the sample with adhesive tape and polythene sheeting and measuring the air flows at the above pressures. The preparation pulses and test sequence were then repeated with the sample unsealed and the difference between readings being the air leakage through the test sample.

5.3 AIR PERMEABILITY - Exfiltration

Three (3) preparatory pulses of **660 Pa** negative pressure were applied to the test sample and any opening lights opened and closed at least once.

The test results were determined by measuring the rate of air flow through the test chamber whilst subjecting the sample to positive pressure differential as follows: **50, 100, 150, 200, 250, 300, 450 and 600 Pa**, this step being held for at least 10 seconds.

Leakage through the test chamber and joints between the chamber and test sample was determined by sealing the sample with adhesive tape and polythene sheeting and measuring the air flows at the above pressures. The preparation pulses and test sequence were then repeated with the sample unsealed and the difference between readings being the air leakage through the test sample.

6. TEST RESULTS

6.1 AIR PERMEABILITY

6.1.1 Reference Air Permeability

Classification based on overall area (Fixed Glazing)

Class	Reference air permeability @ 100 Pa (m ³ /h/m ²)
0	Not Tested
1	50
2	27
3	9
4	3

Classification based on joint length (Opening Joints)

Class	Reference air permeability @ 100 Pa (m ³ /h/m)
0	Not Tested
1	12.50
2	6.75
3	2.25
4	0.75

The required air permeability figures for all additional pressure steps in all classifications were calculated using the equation given in BS EN 12207: 2000.

6.1.2 Air Permeability – Classification

Please note that Negative pressure, Exfiltration testing is optional in BS EN 12207 and mandatory in BS 6375 pt 1:2004 However there are no performance requirements contained within either standard for this test. The test results for Exfiltration testing have been reported using the same criteria as that of Infiltration testing in this report.

Please note:

No overall classification has been achieved as no repeat air permeability tests were conducted, as required in a full test sequence in accordance with BS 6375 pt 1:2004.

6.1.2.1 Overall Area

<u>Positive pressure Infiltration</u>	Classification According to BS EN 12207: 2000	<u>Negative pressure Exfiltration</u>	Classification
Test 1	3	Test 2	3
Overall Classification	N/A	Overall Classification	N/A

6.1.2.2 Length of Joint

<u>Positive pressure Infiltration</u>	Classification According to BS EN 12207: 2000	<u>Negative pressure Exfiltration</u>	Classification
Test 1	3	Test 2	4
Overall Classification	N/A	Overall Classification	N/A

6.1.3 Air Permeability – Results

Total calculated area of the test sample = **1.08m²**

Total measured length of opening joints of test sample = **5.31 m**

6.1.3.1 Tests 1 & 2 – Air Permeability – Area

Pressure Differential Pa	Maximum Air Permeability Rate –Infiltration m ³ /hr/m ²		Maximum Air Permeability Rate – Exfiltration m ³ /hr/m ²	
	Test No. 1		Test No. 2	
	Ambient ° C		Ambient ° C	
	19		19	
50	1.09		1.36	
100	2.28		2.38	
150	3.64		3.82	
200	6.83		4.83	
250	8.47		6.19	
300	9.47		6.93	
450	14.84		8.93	
600	18.94		11.02	

6.1.3.2 Tests 1 & 2 – Air Permeability – Opening Joints

Pressure Differential Pa	Maximum Air Permeability Rate –Infiltration m ³ /hr/m		Maximum Air Permeability Rate – Exfiltration m ³ /hr/m	
	Test No. 1		Test No. 2	
	Ambient ° C		Ambient ° C	
	19		19	
50	0.22		0.28	
100	0.46		0.46	
150	0.74		0.78	
200	1.39		0.98	
250	1.72		1.26	
300	1.93		1.41	
450	3.02		1.82	
600	3.85		2.24	

Note: The standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%, for the above measurements is $\pm 6.86\%$ of the result

