

# BRE Test Report

**Mighton Products LTD Trickle Ventilator tests according to EN13141-1 2019**

**Prepared for:** Andrew Harrison

**Date:** 29<sup>th</sup> January 2024

**Report Number:** P126537-1001

BRE  
Watford, Herts  
WD25 9XX

Customer Services 0333 321 8811

From outside the UK:  
T + 44 (0) 1923 664000  
F + 44 (0) 1923 664010  
E [enquiries@bre.co.uk](mailto:enquiries@bre.co.uk)  
[www.bre.co.uk](http://www.bre.co.uk)

**Prepared for:**  
Andrew Harrison  
Mighton Products Ltd.  
Hinxton  
Cambridgeshire  
CB10 1RG



---

## Prepared by

---

Name C Manescu

Position Senior Engineer

Date 29<sup>th</sup> January 2024

Signature 

---

## Authorised by

---

Name M Swainson

Position Principal Engineer

Date 29<sup>th</sup> January 2024

Signature 

This report is made on behalf of Building Research Establishment Ltd (BRE) and may only be distributed in its entirety, without amendment, and with attribution to BRE to the extent permitted by the terms and conditions of the contract. Test results relate only to the specimens as received and tested. BRE has no responsibility for the design, materials, workmanship or performance of the product or specimens tested. This report does not constitute an approval, certification or endorsement of the product tested and no such claims should be made on websites, marketing materials, etc. Any reference to the results contained in this report should be accompanied by a copy of the full report, or a link to a copy of the full report.

BRE's liability in respect of this report and reliance thereupon shall be as per the terms and conditions of contract with the client and BRE shall have no liability to third parties to the extent permitted in law.



---

## Table of Contents

---

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>Tests summary</b>	<b>4</b>
<b>3</b>	<b>Configuration of products tested</b>	<b>5</b>
<b>4</b>	<b>Details of tests carried out</b>	<b>7</b>
<b>5</b>	<b>Test results</b>	<b>8</b>
5.1	The air permeability of the test equipment	8
5.2	Aerodynamic characteristics	9



---

## 1 Introduction

---

Mighton Products Ltd. requested BRE test 5-off background ventilators to determine the aerodynamic characteristics according to:

EN 13141-1:2019. *Ventilation for buildings – Performance testing of components/products for residential ventilation – Part 1: Externally and internally mounted air transfer devices.*

Mighton supplied test blocks with each of the vents installed on meeting the requirements of Clause 5.1.2.1 of EN13141-1:2019.

The vents submitted for testing were:

Product Name:

Model name	Slot size
D	1-off; 284.8 x 16.2 mm
E	1-off; 410 x 16.2 mm

The blocks and vents were delivered to BRE on 15<sup>th</sup> September and 27<sup>th</sup> September, the testing was undertaken on from 19<sup>th</sup> and 20<sup>th</sup> October 2023.



---

## 2 Tests summary

---

The vents submitted for testing were

Name	EqA @ 1Pa (mm <sup>2</sup> )
D	1540
E	2337

### 3 Configuration of products tested

The Mighton vents test layout is shown in Figure 1.

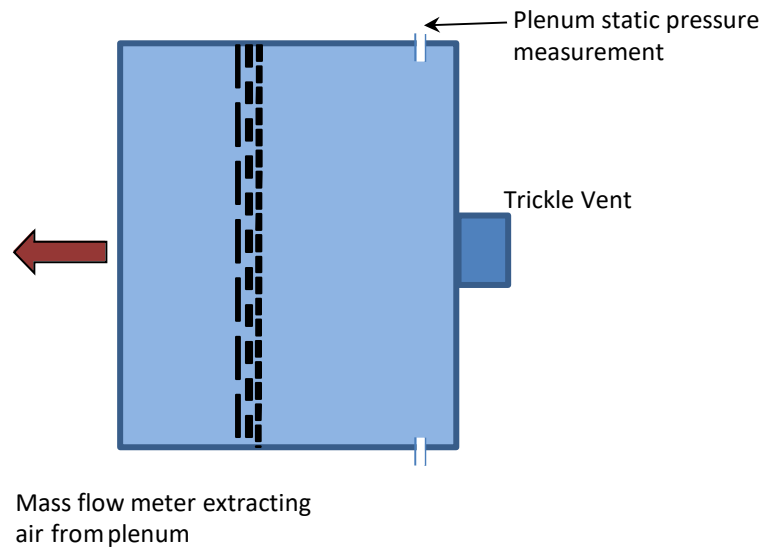


Figure 1 Test layout



Figure 2 Vent installed onto block and in board of plenum.



The five ventilator products submitted for testing are shown in Figure 3.



Figure 3 Five samples of trickle ventilator products tested



## 4 Details of tests carried out

### Test installation and conditions

The test apparatus used conformed to the requirements set out in BSEN 13141-1 2019 clause 5.1.2. An air permeability test was performed on the test apparatus with the vent sealed over before the start of the test to a  $\Delta P$  of 100 Pa. The results are documented in Table 2.

The vents were mounted in a representative 60 mm thick block (supplied by Mighton Products Ltd.) to simulate an installation into a typical double-glazed window header.

**Table 1** Test Instruments Used

Variable	Instrument used for measurement	Calibration	Uncertainty of measurement
Air relative humidity readings	Vaisala HMP110	In-situ 8-point calibration with Michell S8000 Mirror Michell (Traceable NIST)	< $\pm 2\%$ RH < 0.2°C
Airflow rate readings	Hastings LFE LS-6S Chell Display CMD100	In-situ cross calibration with nozzle box using Furness FCO560 Calibrator Furness Controls (UKAS)	1 to 60 l/s < $\pm 0.2+3\%$
	Furness Controls FC096 Pressure difference - Furness Controls FCO560	Furness Controls (UKAS) Furness Controls (UKAS)	0.1 to 3 l/s < $\pm 0.2+3\%$
	Furness Controls LFE FCO96 Display FCO332	In-situ cross calibration with nozzle box using Furness FCO560 Calibrator Furness Controls (UKAS)	6 to 60 l/s < $\pm 0.2+3\%$
	Atmospheric pressure	Druck DPI 260	Furness Controls (UKAS)
Static pressure readings	MKS Baratron	Furness Controls (UKAS)	< $\pm 1\%$ of reading



---

## 5 Test results

---

### 5.1 The air permeability of the test equipment

Table 2 Air permeability results for the Test Rig before the start of the testing.

Test Number	Differential Pressure (Pa)	Flow rate (l/s)
1	100.2	< 0.45



## 5.2 Aerodynamic characteristics

Table 3 – Product D

Flow rate/pressure characteristics for both flow directions and corresponding calculates EqA.

Pressure difference $\Delta p$ (Pa)	qv (l.s <sup>-1</sup> ) Inside to outside	CEN calculated equivalent area mm <sup>2</sup>	Pressure difference $\Delta p$ (Pa)	qv (l.s <sup>-1</sup> ) outside to inside	CEN calculated equivalent area mm <sup>2</sup>
1	1.3	1617	1	1.2	1540
2	1.8	1630	2	1.7	1538
4	2.6	1643	4	2.4	1536
8	3.7	1656	8	3.4	1534
10	4.1	1661	10	3.8	1534
20	5.9	1675	20	5.4	1532

- The calculated mean equivalent area at 1 Pa is 1578.3 mm<sup>2</sup>.
- **The calculated minimum equivalent area at 1 Pa is 1539.9 mm<sup>2</sup>.**

Table 4 – Product D airtightness when closed

Test Number	Differential Pressure (Pa)	Flow rate (l/s)
1	40.4	0.23

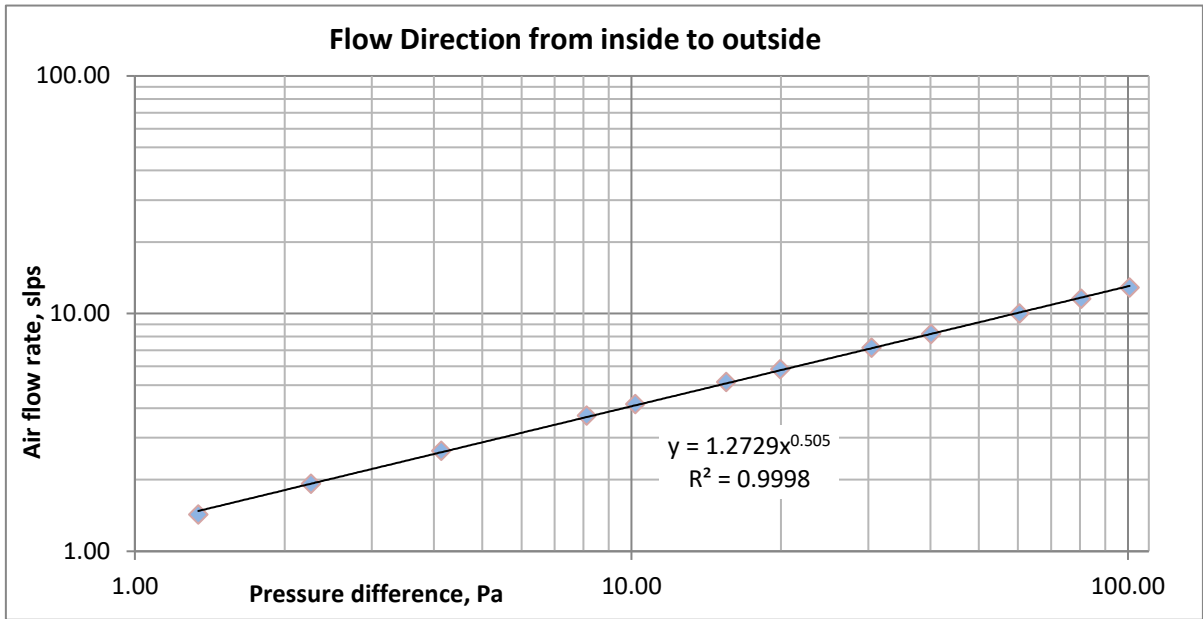


Figure 4 Measured air flow and pressure data for air flow from inside to outside

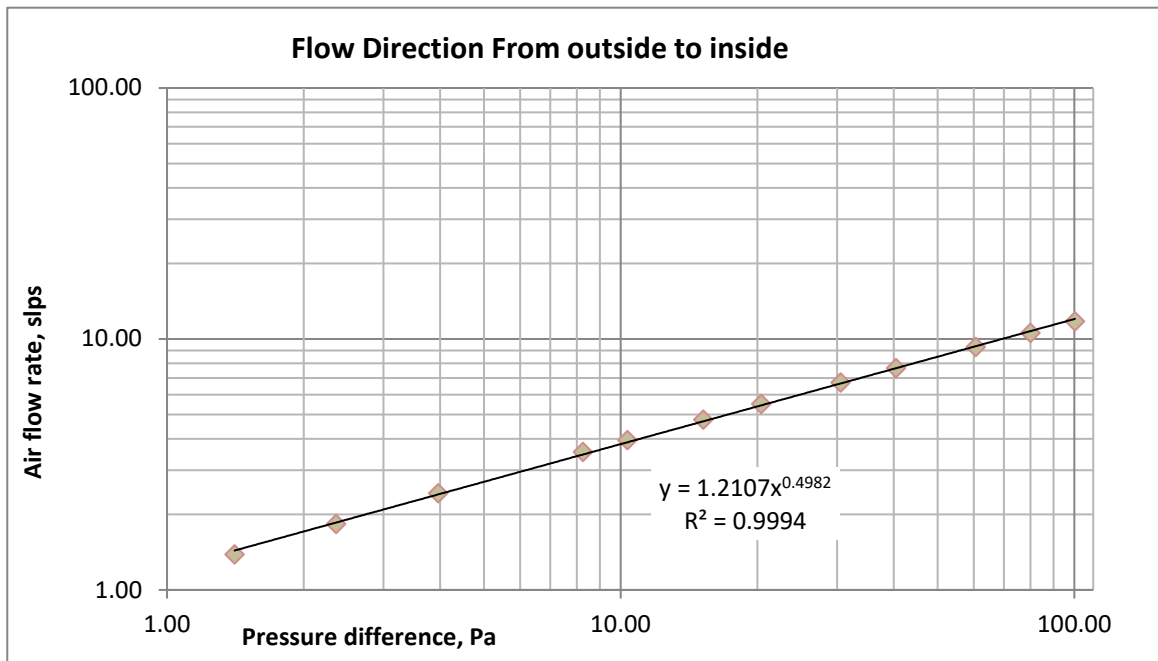


Figure 5 Measured air flow and pressure data for air flow from outside to inside



**Table 5 – Product E**

Flow rate/pressure characteristics for both flow directions and corresponding calculates EqA.

Pressure difference $\Delta p$ (Pa)	qv (l.s <sup>-1</sup> ) Inside to outside	CEN calculated equivalent area mm <sup>2</sup>	Pressure difference $\Delta p$ (Pa)	qv (l.s <sup>-1</sup> ) outside to inside	CEN calculated equivalent area mm <sup>2</sup>
1	2.0	2492	1	1.8	2337
2	2.8	2504	2	2.6	2331
4	4.0	2515	4	3.7	2325
8	5.6	2527	8	5.2	2318
10	6.3	2530	10	5.8	2316
20	8.9	2543	20	8.1	2310

- The calculated mean equivalent area at 1 Pa is 2414.6 mm<sup>2</sup>.
- **The calculated minimum equivalent area at 1 Pa is 2337.1 mm<sup>2</sup>.**

**Table 6 – Product E airtightness when closed**

Test Number	Differential Pressure (Pa)	Flow rate (l/s)
1	39.9	1.19

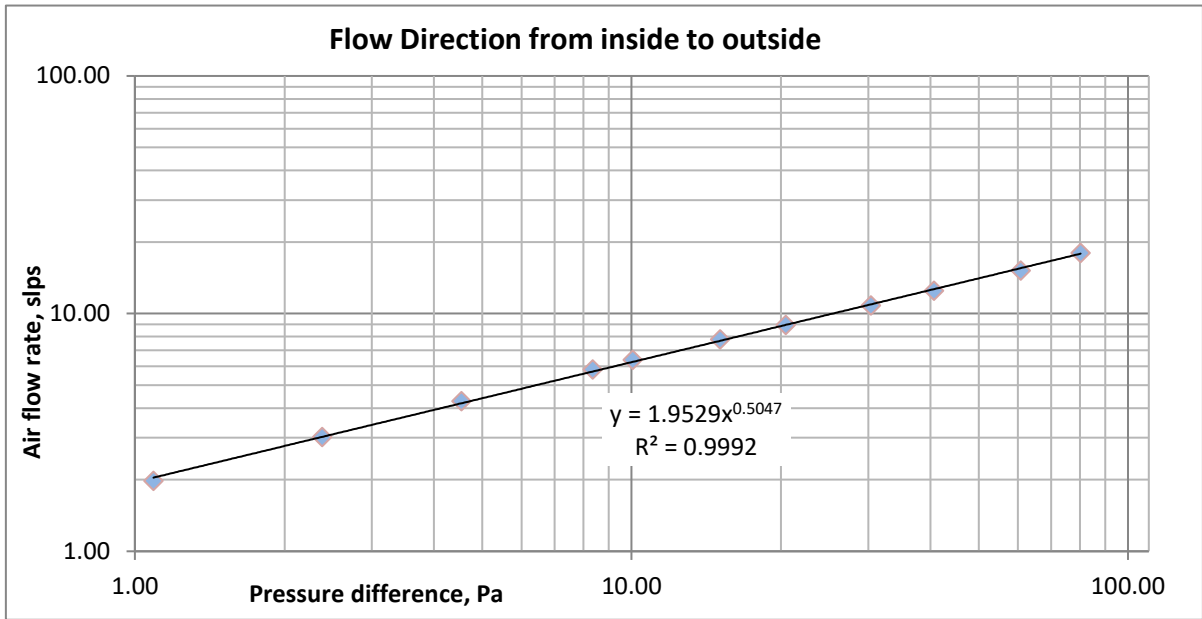


Figure 6 Measured air flow and pressure data for air flow from inside to outside

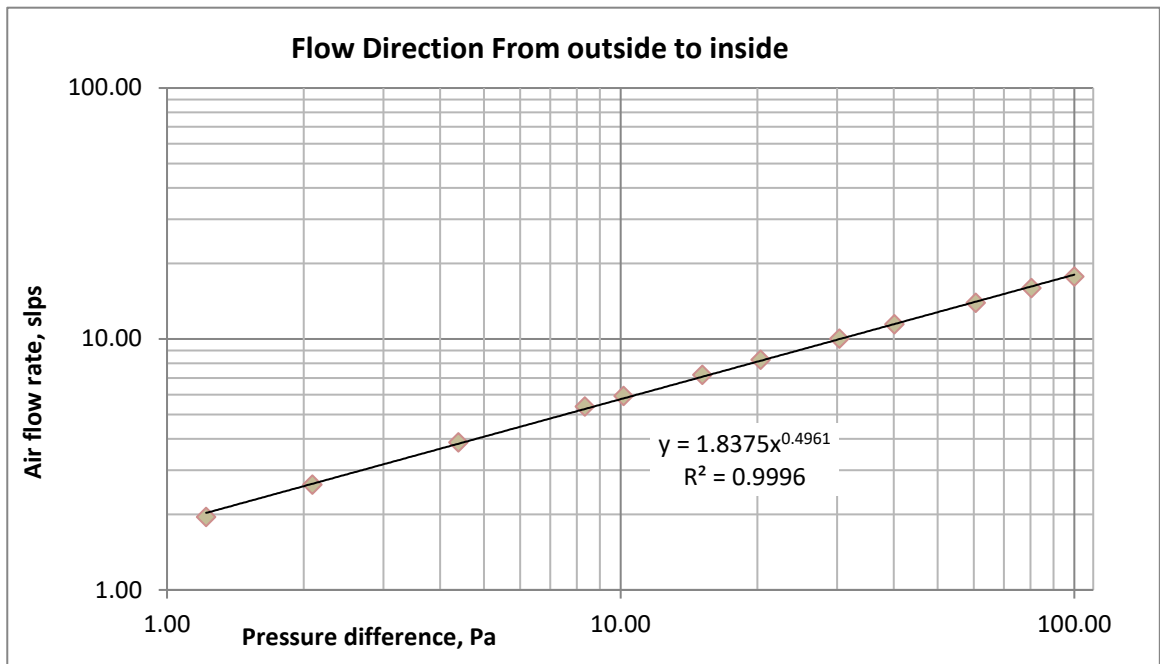


Figure 7 Measured air flow and pressure data for air flow from outside to inside