

Acoustic Test Report

Sponsor:
Senior Architectural Systems Ltd
Eland Road
Denaby Main
Doncaster
DN12 4HA

CONFIDENTIAL

Report: BMT/MTP/F15147/01

Report on the testing of an aluminium fixed light
window for acoustic performance to BS EN ISO
10140-2:2010

Issue date: September 2015

Page 1 of 7



1762

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This document is confidential and remains the property of Chiltern International Fire Ltd T/A BM TRADA. The legal validity of this report can only be claimed on the presentation of the complete report.



Contents

	Page No.
1 Introduction	3
2 Test Specimen Details	3
3 Methodology	5
4 Parameters & Limitations	6
5 Authorisation	6
Appendix 1 – Result & Test Data Sheet (1 Page)	7

1 Introduction

The test specimen was supplied by the sponsor and delivered to BM TRADA on 5 June 2015. The specimen was installed into a timber stud partition within the test chamber by BM TRADA.

Test Details

The specimen was tested to BS EN ISO 10140-2:2010 Acoustics - Laboratory measurement of sound insulation of building elements. Measurement of airborne sound insulation

Testing was conducted at BM TRADA, Chiltern House, Stocking Lane, Hughenden Valley, Buckinghamshire. HP14 4ND on the 8 June 2015.

For details of the testing, please see Section 3, Methodology.

Supporting Construction Description

The partition consisted of two wall leaves separated by a 150mm air gap. Each wall leaf was constructed of nominal 45mm x 90mm softwood studs at 600mm centres with two layers of 15mm plasterboard on each face. The stud wall cavities were filled with 100mm thick Rockwool insulation.

2 Test Specimen Details

Product Name	PURe Internally Glazed
Product Type	Fixed Light Window
Material Type	Aluminium
Overall Dimensions	850mm wide x 2110mm high x 75mm deep

Window Frame

	Material/type	Dimensions (mm)
Stiles and rails	Senior Architectural Systems aluminium profile (Ref. PUR002001)*	75 x 55
Transom	Senior Architectural Systems aluminium profile (Ref. PUR003001)*	75 x 77
Glazing rebate	Single type	73 x 24
Joints	Mitred with Senior Architectural Systems chevrons (Ref. SW4CH7)* and Senior Architectural Systems cleats (Ref. PUR021CT)* fixed with 8No. M4 x 8 machine screws (Ref. SFSCM0408)*	-
Adhesive	Senior Architectural Systems (Ref. 3COS)*	-

* As stated by sponsor, not checked by laboratory

Glazing

		Make/type/size (mm)	Location (dimensions in mm)
Glass type and configuration		8.8 clima A+1.1 Lam / 12 Triseal super spacer with Argon / 6 clima A+1.1 toughened / 12 Triseal super spacer with Argon / 8.8 clear laminate	-
Overall size	Top	768 wide x 846 high	-
	Bottom	768 wide x 1136 high	-
Sight size	Top	740 wide x 817 high	-
	Bottom	740 wide x 1105 high	-
Bead		Senior Architectural Systems aluminium profile (Ref. PUR013)*	Internally beaded
Bead fixing		Clipped onto profile	-
Packers		1No. 46 x 100 x 7 and 1No. 28 x 100 x 2 plastic packers	In all corners
Gaskets		Senior Architectural Systems (Ref. SP2396)*	Between glass and rebate upstand
		Senior Architectural Systems (Ref. SP2400)*	Between glass and bead
Foam		Senior Architectural Systems (Ref. EPS005)* 15Ø	Inserted around perimeter of glazing unit

* As stated by sponsor, not checked by laboratory

The legal validity of this report can only be claimed on presentation of the complete report.

3 Methodology

Airborne Sound Insulation Test

- The loudspeakers were placed in the corners of the source room
- The sound level meter was calibrated prior to testing.
- 5 measurements were taken in the source room, at fixed positions.
- 5 measurements were taken in the receive room at fixed positions.
- Background measurements were taking at each third octave frequency between 50Hz and 5000Hz.
- 6 Reverberation measurements were taken in the receive room, in accordance with BS EN ISO 3382-2:2008 interrupted, engineering method.
- Calculations, including C & C_{tr}, were carried out in accordance with BS EN ISO 717-1
- The sound reduction index was calculated using the following formula from BS EN ISO 10140-2:2010:

$$R_w = L1 - L2 + 10\text{Log}\left(\frac{S}{A}\right) \text{ dB}$$

Where:

L1 is the logarithmic average of the source room measurements

L2 is the logarithmic average of the receive room measurements

S is the area of the test specimen

A is the equivalent absorption area, where $A = \frac{0.16V}{T}$

Where:

V = The volume of the receive room

T = the reverberation time measured in seconds

1. Logarithmic average of 5 Measurements (L1 & L2)
2. Deduction of L1s from L2s
3. Area of test specimen (S) divided by equivalent sound absorption area (A)
4. Weighted Final Result R_w dB

Test Equipment

Equipment	Equipment reference number
Bruel & Kjar Sound Level Meter (Type 2270)	ACT-009
Bruel & Kjar Microphones (Type 4189)	ACT-010 & ACT-016
Bruel & Kjar Calibrator (Type 4231)	ACT-011
Amplifiers	ACT-007 & ACT-049
Noise Generators	ACT-008 & ACT-009
Loudspeakers (EV ZX1-90PA)	ACT-006, ACT-021, ACT-022
Graphic Equaliser (DBX Dual Channel)	ACT-023

4 Parameters & Limitations

Parameters



The test fulfilled all criteria required of ISO 10140-2, including:

- Sound level meter (microphone) was located as required
- Sound sources (loudspeakers) were located as required
- Reverberation Time readings were greater than 20dB but not so large that the observed decay cannot be represented by a straight line.
- Background noise measurements were 10dB below L2 measurements.
- Temperature was reported to within $\pm 0.1^{\circ}\text{C}$
- Barometric pressure was reported to within ± 0.01 Mbar (± 1 Pa)
- Humidity was reported to within $\pm 1\%$
- Frequencies 50Hz, 63Hz and 80Hz are outside of our UKAS accreditation, and are for reference only. These frequencies do not affect the over R_w figure.
- R'_{\max} of the test chambers was measured to be 65dB
- The test chambers are two cuboid rooms 5.49m wide and a ceiling height of 2.58m, volumes of chambers for testing are reported with the individual test data

Limitations

- The results only relate to the behaviour of the specimen submitted for test, as described in the Technical Specification (Section 2), and under the particular conditions of test.
- The results are not intended to be the sole criteria for assessing the acoustic performance of the element in use nor do they necessarily reflect the actual behaviour once installed on site.
- The specification and interpretation of test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. BM TRADA will be able to offer a review of the procedures adopted for a particular test to ensure that they are consistent with current practices.
- The results are solely for use by the sponsor and the stated purpose.
- The sponsor cannot rely on information provided without consent from BM TRADA.
- Any recommendations are specific to the assignment and the sponsor.
- Extracts from the report are not permitted.

5 Authorisation

	Issued by:	Checked by:
Signature:		
Name:	Martin Durham	Lee Grant-Riach
Title:	Lead Technical Officer	Technical Officer
Date of Issue	28 th September 2015	

The legal validity of this report can only be claimed on presentation of the complete report.

Appendix 1 – Result & Test Data Sheet (1 Page)

Data Sheet Ref.	Product Details		Test Result $R_w (C; C_{tr})$
MTP/F15147/01/P001	Product Name	PURE Internally Glazed	37 (-1;-3) dB
	Product Type	Fixed Light Window	

Sponsor:	Senior Architectural Systems Ltd
Product Name	PURe Internally Glazed
Product Type	Fixed Light Window
Material Type	Aluminium
Variations:	None

For detailed technical specification, please refer to Section 2 of the report

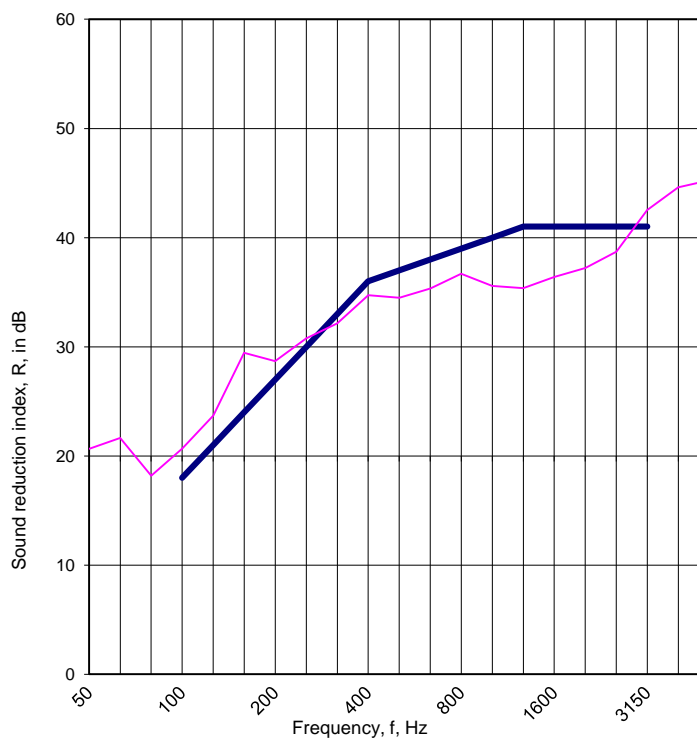
Data Sheet Ref. MTP/F15147/01/P001

Date of Test: 08/06/2015

Source Room Volume: 77.30 m³
Receive Room Volume: 71.30 m³
Specimen Installed By: Client
Area of Specimen (S): 1.80 m²
Temp. in Test Rooms: 17.0 °C
Static Pressure: 101670.0 Pa
Humidity in Test Rooms: 60.0 %

f, Hz	R, dB
50 ⁺	20.6
63 ⁺	21.6
80 ⁺	18.2
100	20.7
125	23.7
160	29.4
200	28.7
250	30.8
315	32.1
400	34.7
500	34.5
630	35.3
800	36.7
1000	35.6
1250	35.4
1600	36.4
2000	37.2
2500	38.7
3150	42.5
4000	44.6
5000	45.2
AAD	-30.3

Frequency range for rating in accordance with ISO 717-1



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

R_w = 37 dB
 $R_w + C$ = 36 dB
 $R_w + C_{tr}$ = 34 dB

$C_{(50-3150)}$ = -1 dB **$C_{tr(50-3150)}$ = -5 dB**
 $C_{(50-5000)}$ = 0 dB **$C_{tr(50-5000)}$ = -5 dB**
 $C_{(100-5000)}$ = 0 dB **$C_{tr(100-5000)}$ = -4 dB**

Martin Durham
Lead Technical Officer

⁺ indicates that the frequency is outside of our UKAS accreditation and is for information only

The legal validity of this report can only be claimed on presentation of the complete report

Report for: Senior Architectural Systems Ltd
 Report Ref: BMT/MTP/F15147/01

BM TRADA provides independent certification, testing, inspection, training and technical services around the world. We help customers large and small to prove their business and product credentials and to improve performance and compliance. With an international presence across many industry sectors, we offer a special focus and long history of technical excellence in supply chain certification, product certification and testing, and technical services to the timber, building, fire and furniture industries.



testing@bmtrada.com



bmtradagroup.com



+44 (0) 1494 569800