

RS/C/1068
ANC Task Number: 143 22009

5th March 2009

Icynene Inc.

Sound Insulation Test
Conducted at Wentworth
Avenue, Inskip, Lancashire

Prepared for:-

Mr. Simon Falkner-Lee
Icynene Inc
12 Market Place
Devizes
Wiltshire
SN10 1HT

Report prepared by: Robert Smith

Tests conducted by: Robert Smith



acoustic design & control limited

registered office: 1210 centre park square warrington cheshire wa1 1ru
registered in england no. 5117653



CONTENTS

1.0 SUMMARY

2.0 INTRODUCTION

- 2.1 Instruction
- 2.2 Overview of Report

3.0 ASSESSMENT STANDARDS

- 3.1 Approved Document E
- 3.2 Code for Sustainable Homes
- 3.3 Requirements for the Dwelling

4.0 TEST DETAILS

- 4.1 Dates, Times and Personnel
- 4.2 Equipment
- 4.3 Test Method
- 4.4 Description of Background Noise
- 4.5 Construction of Tested Element

5.0 RESULTS AND DISCUSSIONS

6.0 CONCLUSION

Annex 1: Test Certificates for Airborne Sound Insulation - Wall

1.0 SUMMARY

The residential development at Wentworth Avenue, Inskip, comprises four pairs of semi-detached town houses.

ADC Acoustics Ltd was appointed to conduct a sound insulation test in accordance with the requirements of the Building Regulations Approved Document E (ADE).

The result of the test, presented within this report, has shown that the tested separating wall complied with the requirement contained within the Building Regulations ADE, and so may be regarded as having 'passed' the test.

In addition, the airborne sound insulation of the tested separating wall complied with the minimum sound insulation performance, required to comply with the 3 credit route, as detailed in the Code for Sustainable Homes scheme.



R Smith



A Frisby

2.0 INTRODUCTION

The residential development at Wentworth Avenue, Inskip, comprises four pairs of semi-detached town houses.

In order to assess compliance with the requirements contained within both Approved Document E and the Code for Sustainable Homes scheme, an airborne sound insulation test was conducted across the wall separating plots 7 and 8 on the development.

2.1 Instruction

ADC Acoustics Ltd was appointed by Icyne Inc to conduct a sound insulation test in accordance with the requirements of both the Building Regulations Approved Document E (ADE) and the Code for Sustainable Homes scheme.

2.2 Overview of Report

This report first summarises the various standards for internal sound transfer, followed by the test details.

The results are presented in Section 5. This section refers to the test certificates presented in Annexe 1.

Conclusions are contained within Section 6.

3.0 ASSESSMENT STANDARDS

3.1 Approved Document E

The new version of Building Regulations Approved Document E: 2003 came into force in July 2003. Among the aspects covered are a range of performance criteria required for Building Regulations approval. A brief summary of the performance criteria is shown below.

Type of Accommodation	Nature of the Building Work	Transmission Path	Type of Party Element	Performance Criterion (dB)
Dwellings	Purpose built	Airborne	Wall	$45 D_{nTW} + C_{Tr}$
			Floor	$45 D_{nTW} + C_{Tr}$
			Stairs	$45 D_{nTW} + C_{Tr}$
		Impact	Floor	$62 L'_{nTW}$
	Formed by material change of use	Airborne	Wall	$43 D_{nTW} + C_{Tr}$
			Floor	$43 D_{nTW} + C_{Tr}$
			Stairs	$43 D_{nTW} + C_{Tr}$
Impact	Floor	$64 L'_{nTW}$		

Note that, for airborne sound insulation, the LARGER value means better performance, so the values in the above table are MINIMUM performance standards. For impact sound level, however, a LOWER value means better performance, so the values in the above table are MAXIMUM levels.

3.2 Code for Sustainable Homes

The Code for Sustainable Homes has been prepared by the Building Research Establishment (BRE) and the Construction Industry Research and Information Association (CIRIA).

The Code is intended to provide a single guide for the design and construction of sustainable housing and, as with the BREs Ecohomes scheme, it contains a rating scheme permitting points to be awarded for the overall sustainability of new homes with reference to their performance in a number of key areas, namely:

- | | |
|---------------------------|-----------------------------|
| i) Energy | (vi) Pollution |
| ii) Water | (vii) Health and well-being |
| iii) Materials | (viii) Management |
| iv) Surface water run-off | (ix) Ecology |
| v) Waste | |

With reference to the sound insulation of separating elements between dwellings, this falls under the Health and Well-being category. Credits are available where the developer commits to provide enhanced levels of sound insulation, these enhanced levels of sound insulation may be demonstrated by pre-completion sound testing or by the use of construction techniques that comply with the specifications provided by Robust Details Ltd. The credit requirements for the scheme are detailed in the table below.

Credit Requirements

Criteria	Credits
Where: <ul style="list-style-type: none"> • Airborne sound insulation values are at least 3dB higher • Impact sound insulation are at least 3dB lower 	1
OR	
<ul style="list-style-type: none"> • Airborne sound insulation values are at least 5dB higher • Impact sound insulation are at least 5dB lower 	3
OR	
<ul style="list-style-type: none"> • Airborne sound insulation values are at least 8dB higher • Impact sound insulation are at least 8dB lower 	4
Than the performance standards set out in the Building Regulations for England and Wales, Approved Document E (2003 Edition, with amendments 2004).	

3.3 Requirements for the dwellings

As all the dwellings on the development are purpose built, the tested plots will need to comply with the performance requirement detailed in Approved Document E and highlighted below:

Type of Accommodation	Nature of the Building Work	Transmission Path	Type of Party Element	Performance Criterion (dB)
Dwelling Houses	Purpose Built	Airborne	Wall	$45 D_{nTW} + C_{Tr}$
			Floor	$45 D_{nTW} + C_{Tr}$
			Stairs	$45 D_{nTW} + C_{Tr}$
		Impact	Floor	$62 L'_{nTW}$

4.0 TEST DETAILS

4.1 Dates, Times and Personnel

The tests were carried out on the 4th March 2009 by Robert Smith of ADC Acoustics.

Robert Smith is an Approved Tester as detailed in ADE 2003 and ADC Acoustics Ltd are Members of the Association of Noise Consultants (ANC registered organisation no. 143).

4.2 Equipment

The following equipment was used throughout the tests:

Equipment Description	Manufacturer	Type Number	Serial Number	Date of Calibration	Calibration Certification Number
Sound Level Meter	CEL	573.C1R	3/1142168	23/10/07	AC/07/150/04
Acoustic Calibrator	CEL	284/2	4/10327024	22/10/07	AC/07/150/01

The sound level meter was calibrated at the beginning and end of the tests with no significant deviation being observed.

Also used was a Mackie SRM 450 active loudspeaker and mini disk pink noise source.

4.3 Test Method

The testing method for airborne sound insulation was in full accordance with the suggested method presented in BS EN ISO 140-1998 part 4. In addition, all the procedures in Annexe B of the Approved Document E, guidance to the Building Regulations, have been followed.

For airborne tests, two individual speaker positions were used for each source room, with a total of ten individual one third octave measurements of ten seconds each, recorded for both the source and receiver rooms. Measurements were made to monitor the levels in the receiving rooms of the tested partition in question. Measurements of the receiver room's reverberation time were also made for each tested partition.

In addition, measurements of the background noise levels, in the receiving rooms, are made for each test undertaken.

All plots were unfurnished and uncarpeted for the duration of the tests.

The internal layout of the dwellings was such that the only habitable rooms sharing the separating wall were the living/dining rooms on the ground floor. As a consequence, airborne sound insulation tests of the separating wall could only be undertaken at this level.

4.4 Description of Background Noise

At the time of the test the background noise climate comprised contributions from site working and road traffic noise.

4.5 Construction of Tested Element

The following information was provided by the client:

Separating wall

Twin independent timber frame construction comprising two 89 x 38mm timber frames separated by a 50mm cavity, with 89mm of Icynene soft spray foam sprayed into each of the two timber frames. Both frames were lined with a 9mm thick, full length, sheathing board, one layer of 19mm plasterboard plank and one layer of 12.5mm wallboard per side.

5.0 RESULTS

The results from the sound insulation test are reproduced in the table below, graphical presentation of the result is contained within the Annexe.

Separating wall airborne sound insulation result

Test Number	Source Room	Source Room Volume (m ³)	Receiver Room	Receiver Room Volume (m ³)	Performance (D _{nT} w + C _{Tr})	Minimum Criterion (D _{nT} w + C _{Tr})	Test Result
1.1	Plot 8, living room	49	Plot 7, living room	49	50	45	Pass

6.0 CONCLUSIONS

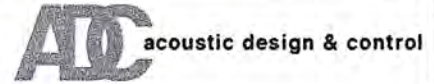
The result of the test, presented within this report, has shown that the tested separating wall complied with the requirement contained within the Building Regulations ADE, and so may be regarded as having 'passed' the test.

In addition, the airborne sound insulation of the tested separating wall complied with the minimum sound insulation performance, required to comply with the 3 credit route, as detailed in the Code for Sustainable Homes scheme.

We have no further comments to make.

Annex 1 : Test Certificates for Airborne Sound Insulation - Wall

Standardised level difference according to ISO 140-4
Field Measurements of airborne sound insulation between rooms



Client Name Icnene Inc

Wentworth Avenue

Date of Test : 04.03.2009

Description and identification of the building construction and test arrangement, direction of measurement :

Source room : Plot 8, living room

Volume : 49

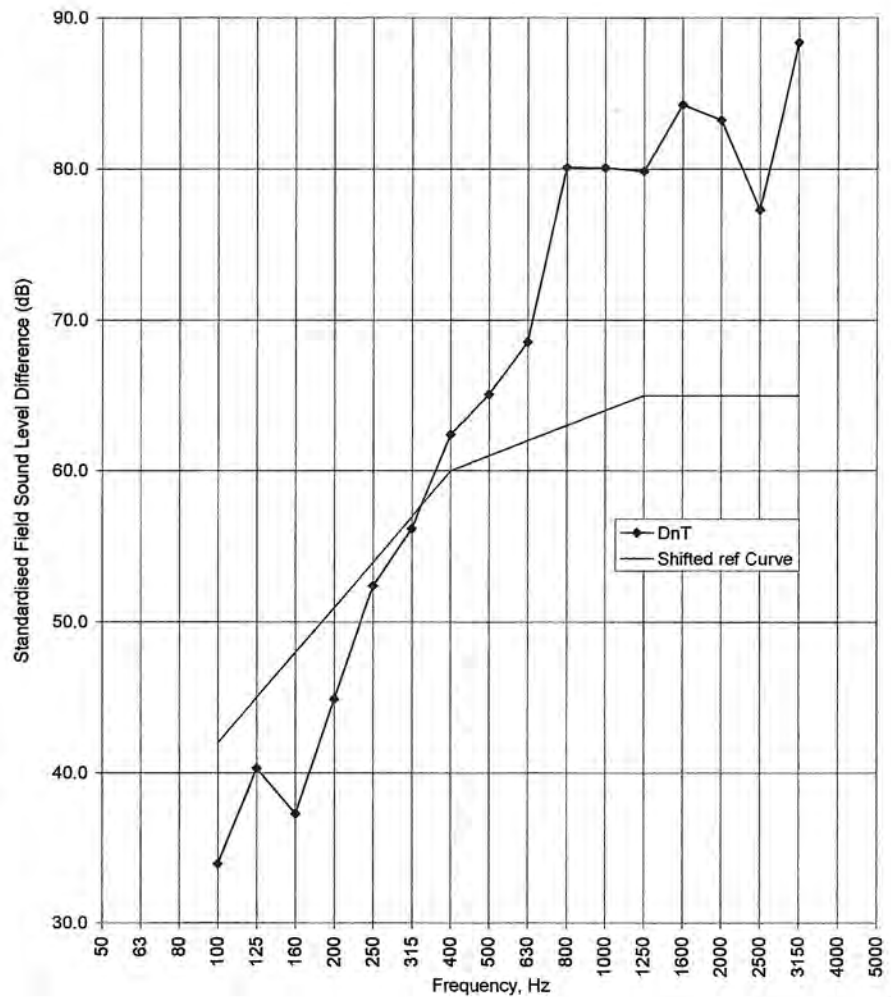
Receiver room : Plot 7, living room

Volume : 49

Element Description : Twin independent timber stud wall (89 x 38mm studs) separated by a clear 50mm cavity. Both frames were filled with 90mm of Icnene soft spray foam prior to lining with one full OSB sheathing layer, one layer of 19mm plank and one layer of 12.5mm wallboard per side.

Test arrangement : Horizontal via separating wall

Frequency Hz	DnT dB
50	
63	
80	
100	34.0
125	40.3
160	37.3
200	44.9
250	52.4
315	56.2
400	62.4
500	65.1
630	68.6
800	80.1
1000	80.1
1250	79.9
1600	84.3
2000	83.3
2500	77.3
3150	88.4
4000	
5000	



Rating according to ISO 717-1

$D_{nT,w} (C ; C_{tr}) = 61 (-4 ; -11) \text{ dB}$

No. of test report : 1068.00 1.1

Name of test institute : Acoustic Design & Control Ltd

Date : 04.03.2009