

Case Study: WindowSkins Sound Performance

Introduction

We were contacted by Mr Sunley in February 2017, expressing an interest in the thermal and noise insulation offered by WindowSkins.

In particular, Mr Sunley was interested in how effective WindowSkins were at reducing noise, as his basement flat windows would often pick up a lot of pedestrian and traffic noise at street level.

This proved to be a good opportunity to test WindowSkins sound dampening performance.

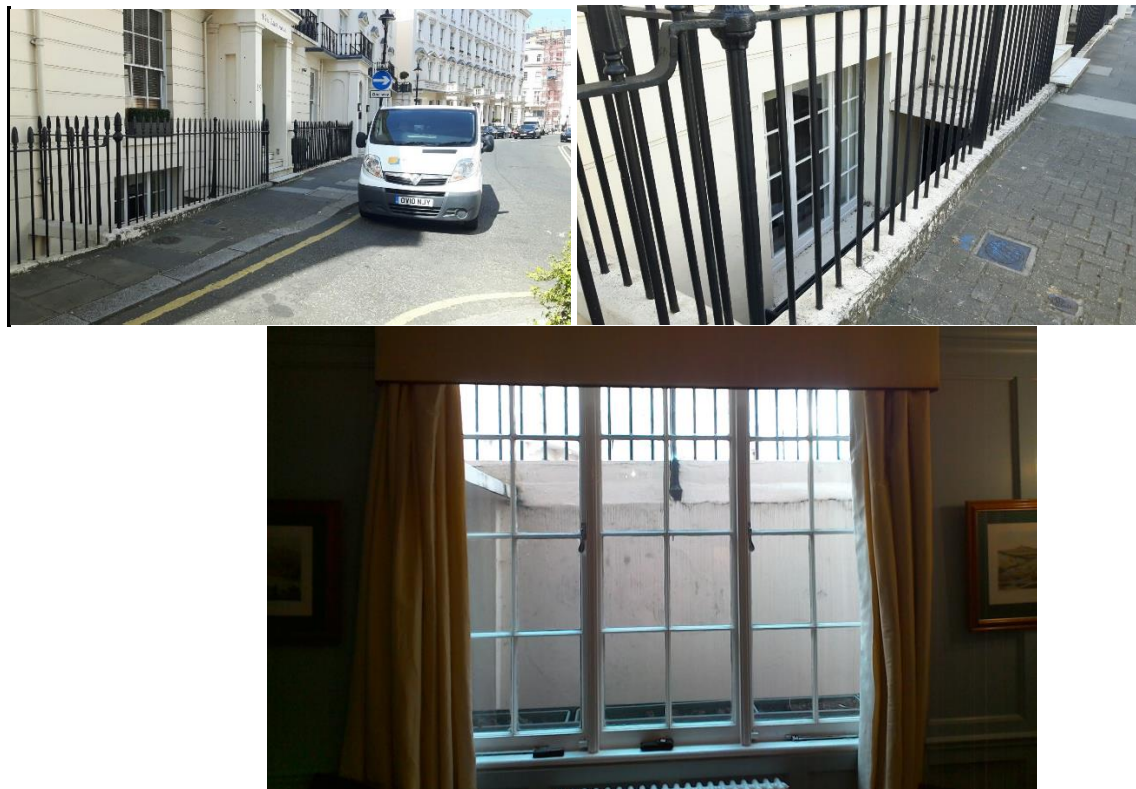
Setup

Our testing was performed at a basement Studio Apartment, situated in West Eaton Place, Belgravia.

The studio had three casement style windows, each measuring 0.6 x 1.7 metres.

We installed WindowSkins to all Windows (three in total).

The total area was just over 3 square metres



Method & Controls

The test we performed was a simple one – we would sound our vehicle horn from outside the property and measure the decibel reading from inside



To measure the decibel reading, we used an 'A-weighted' Tacklife SLM01 Decibel Meter

We performed three sets of test:

- I. No WindowSkins (control)
- II. With 2mm WindowSkins (standard)
- III. With 4mm (double thickness)



Outside Parameters

The WindowSkins vehicle was situated 4.3 Metres away from the Window

The horn measured 95 decibels at 0 metres from the Van

The horn measured 88 decibels at 4.3 metres from the Van (i.e. immediately outside the window)

Inside Parameters

The decibel meter was situated in a central position, on a soft furnished chair, 1.3 metres away from the window.

The gap between WindowSkins and Glass was 7cm

The vehicles horn was sounded three times, for three seconds, and an average decibel reading was calculated

Results

WindowSkin Thickness	(Decibel Readings)				
	Reading 1	Reading 2	Reading 3	Average	Difference
0mm (Not fitted)	56.3	54.7	56.1	55.7	
2mm (Standard)	44.7	45.6	45.2	45.2	10.5
4mm (Double)	38.1	39.2	39.2	38.8	6.3

Interpretation

To interpret these results, we must first highlight two important points regarding the decibel scale in particular:

- The decibel scale is logarithmic, rather than linear in nature. (Hence 100 decibels **is not** twice as loud as 50 decibels)
- In general, most people perceive one sound to be twice as loud as another when they are about 10 decibels apart. (Hence 60 decibels would sound twice as loud as 50 decibels)

“Here's another way of looking at it: If the sound from one typewriter registers 60 dB, then ten typewriters clacking away would register 70 dB (not 600 dB!), and they would sound only twice as loud as one typewriter. You would need 100 typewriters to reach a noise level of 80 dB, and together they would sound only four times as loud as a single typewriter.”

For more information, please refer to <https://www.noisehelp.com/decibel-scale.html>

Conclusion

It can be seen that **2mm** WindowSkins reduced the decibel reading by 10.5 – this is equivalent to the *Relative Perceived Loudness* being about **52% quieter**.

Switching to **4mm** WindowSkins reduced the decibel reading by 16.9 – this is equivalent to the *Relative Perceived Loudness* being about **69% quieter**.

$$\text{where Relative Perceived Loudness} \approx 2^{-\Delta\text{dB}/10}$$

It would be reasonable to conclude that WindowSkins significantly reduces noise (see <https://www.noisehelp.com/noise-level-chart.html>) - indeed our client feedback supports this evidence.

It should be remembered that results will vary, and that the **size of gap** between WindowSkin and Glass **is** important – the greater, the better

Total Coverage is also important. For those parts of the window which remain bare, suitable consideration should be made in terms of the fabrics noise transmission characteristics (e.g., wood, aluminium, pvc). Our test results do not consider this variability, and should be used as **general guidance only**

References & Further Reading

<https://www.noisehelp.com/>

<https://windowskins.co.uk/window-soundproofing>