

BLOCKOUT NOISE



NOISE RESISTANCE CHARACTERISTICS OF A BLOCKOUT SHUTTER

The University of NSW through its division UNISEARCH LTD conducted a report on the insulating properties of an aluminium shutter in March 1984. Test results showed the polyurethane foam core in Blockout's roll formed aluminium roller shutter design provide noise reductions of up to 50% (subject to the home's construction).

The test consisted of:

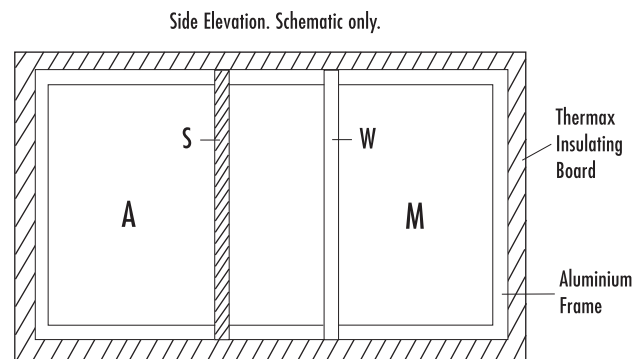
SET-UP

A small aluminium shutter with the overall dimensions of approximately 1000 x 1000 mm was mounted in an aluminium framework made of "Speedframe" (see figure) with the shutter (S) 12 cm from the window (W) to stimulate a normal window installation in a building. On the other side of the window was the insulated measuring chamber (M), stimulating the interior of the room. Another insulated chamber (A) was erected adjacent to the shutter (see figure).

Chambers A and M provided freedom from the interference from extraneous sound sources. A loudspeaker with a flat frequency response was mounted in A and driven by a "pink noise" generator.

Such a generator gives an output "noise" signal having equal energy per octave over the entire audio spectral range.

A microphone was installed in chamber (M) and connected to an instrument which registered sound intensity in decibels (db). It also incorporated a number of band-pass filters, each having a frequency pass-band of one octave. The centre-frequency of each octave ranged from 31.5 hertz to 16 kilohertz.



Relative Intensity measured in db.

| CENTRE OF FREQUENCY (Hz) | DISPOSITION | | | | |
|-----------------------------|-------------|--------------|-------------|-----------------------|-------------------|
| | NOTHING | SHUTTER ONLY | WINDOW ONLY | SHUTTER & WINDOW ONLY | DECIBEL REDUCTION |
| 31.5 | 57 | 54 | 56 | 53 | 3 |
| 63 | 65 | 56 | 63 | 54 | 9 |
| 125 | 66 | 57 | 64 | 58 | 6 |
| 250 | 62 | 52 | 59 | 55 | 4 |
| 500 | 71 | 60 | 62 | 56 | 6 |
| 1000 | 69 | 55 | 63 | 52 | 11 |
| 2000 | 72 | 53 | 62 | 49 | 13 |
| 4000 | 70 | 49 | 55 | 42 | 13 |
| 8000 | 66 | 45 | 51 | 38 | 13 |
| 16000 | 65 | 38 | 42 | 31 | 11 |

TEST RESULTS

Four dispositions were used in this test. Between the loudspeaker and microphone were placed-

- nothing,
- shutter only,
- window only and
- shutter and window.

Points to note:

Readings at frequencies below 250 Hz were not very reliable, as the meter readings were quite unsteady. However, they reflected the general trend.

Readings at 8000 Hz were included, but are not of great importance as the ear is not very sensitive at these frequencies (the upper frequency of a piano is about 4000 Hz). Tested alone the shutter was more effective than the window.

The shutter at all frequencies reduced sound intensities. Expressed in decibels the ration of intensities transmitted without and with the shutter was about 10 decibels.

This would appear to an average person as a reduction of about 50% in loudness.

