selectaglaze™

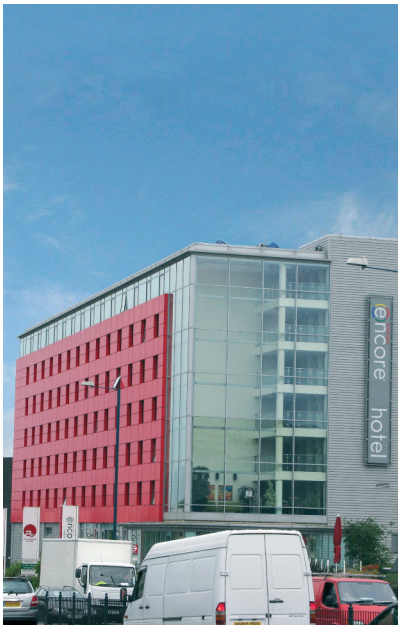
By Appointment to
Her Majesty The Queen
Manufacturer and Supplier
of Secondary Glazing
Selectaglaze Ltd.
St. Albans

Uniclass L413:N3721	EPIC D172:Y45
CI/SfB (31.4) Hh4 (P2)	

December 2012

SELECTAGLAZE secondary glazing

noise insulation



improving acoustic performance

What is Noise?

- Noise is unwanted sound. Responses are partly subjective since one person's noise may be another's music.
- Noise is a form of pollution and there are many sources including traffic, aircraft, trains, construction works or simply other people's work and leisure activities.
- Disturbance levels will depend on the type of noise, the loudness as well as time of day, duration and the ability to control it.
- Noise pollution can:
  - Distract concentration
  - Reduce performance
  - Cause sleep disturbance
  - Induce sleep disturbance
  - Raise annoyance and stress levels

Measuring Sound

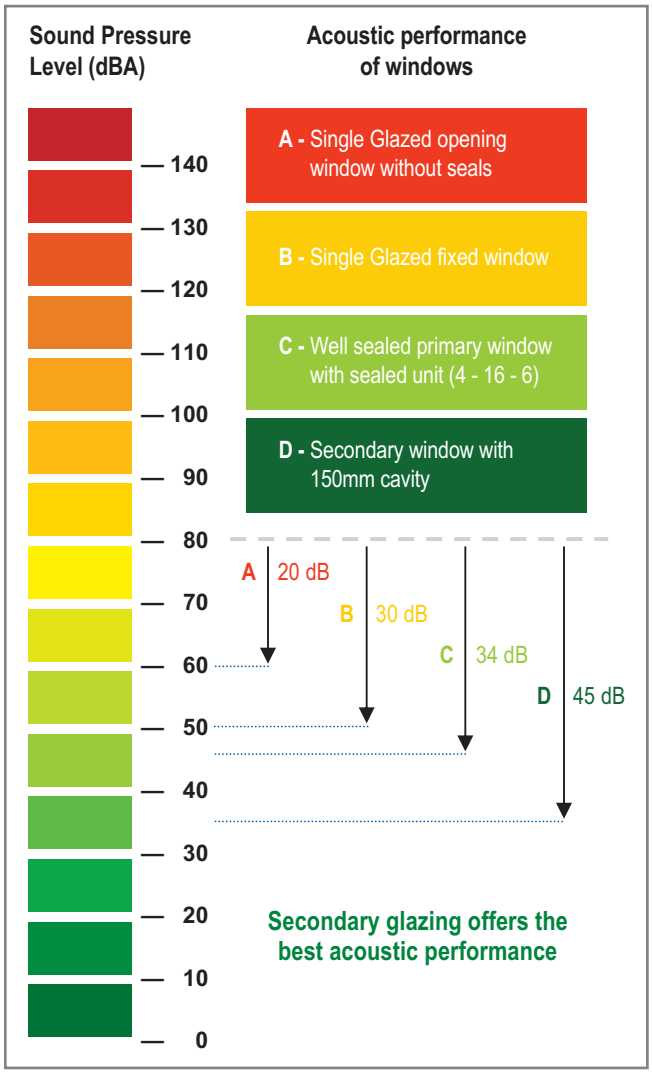
Sound is measured as a pressure and is expressed in decibels.

The scale is logarithmic and an increase in Sound Pressure Level (SPL) of 10dB approximates to a doubling of loudness whereas a change of 3dB is just about noticeable.

Measurement is normally made with a filter to mimic the response of the human ear and results are expressed as 'A' weighted or dBA.

Laboratory measurements can test the sound insulation capability of a material or building element over a range of frequencies from 100Hz to 3150Hz.

The average of these measurements is the Mean Sound Reduction Index or Rm and when adjusted for the human ears response it is termed Rw or the Weighted Sound Reduction Index.



Guidance on acceptable noise levels

The World Health Organisation 'Guidelines for Community noise' revised 1999 provides recommendations for inclusion in national guidelines.

UK guidelines include:
- BS 8233:1999 'Sound insulation and noise reduction for buildings'
- Planning and Policy Guidance 24: Planning and Noise
- Building Bulletin 93: Acoustic design in schools

Reasonable Noise levels

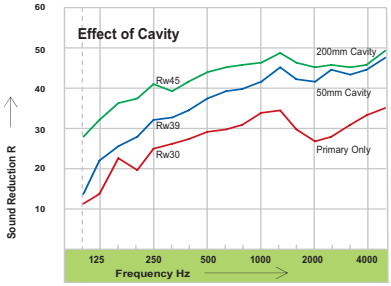
Official guidelines indicate

Bedrooms	30-35 dB
Music Rooms	30-35 dB
Living rooms	30-40 dB
Classrooms/meeting rooms	35-40 dB
Library	35-40 dB
Open office	45-50 dB

How does Secondary Glazing work?

Sound is transmitted through the existing window by direct vibration of the glass. The larger air space achieved with secondary glazing de-couples the movement of the inner and outer glass and so reduces resonance. The two leaves will then act more as separate barriers and performance is much improved.

Effect of Cavity



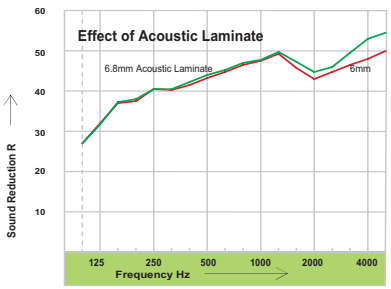
The cavity or space between an existing primary window and the secondary unit can make a significant difference to the level of noise insulation. Unlike sealed units where the two pieces of glass are rigidly coupled together the primary and secondary windows act as independent barriers to the transmission of noise. The greater the cavity between them the better the dampening effect of the combined window.

Avoid the Gap

Gaps around window frames representing just 1% of the frame area allow the passage of airborne sound which can reduce noise insulation levels by as much as 10dB. A purpose made secondary window seals the whole of the external window with frames bedded in acrylic mastic and opening panels fitted with twin brush or compression seals.

Glass options

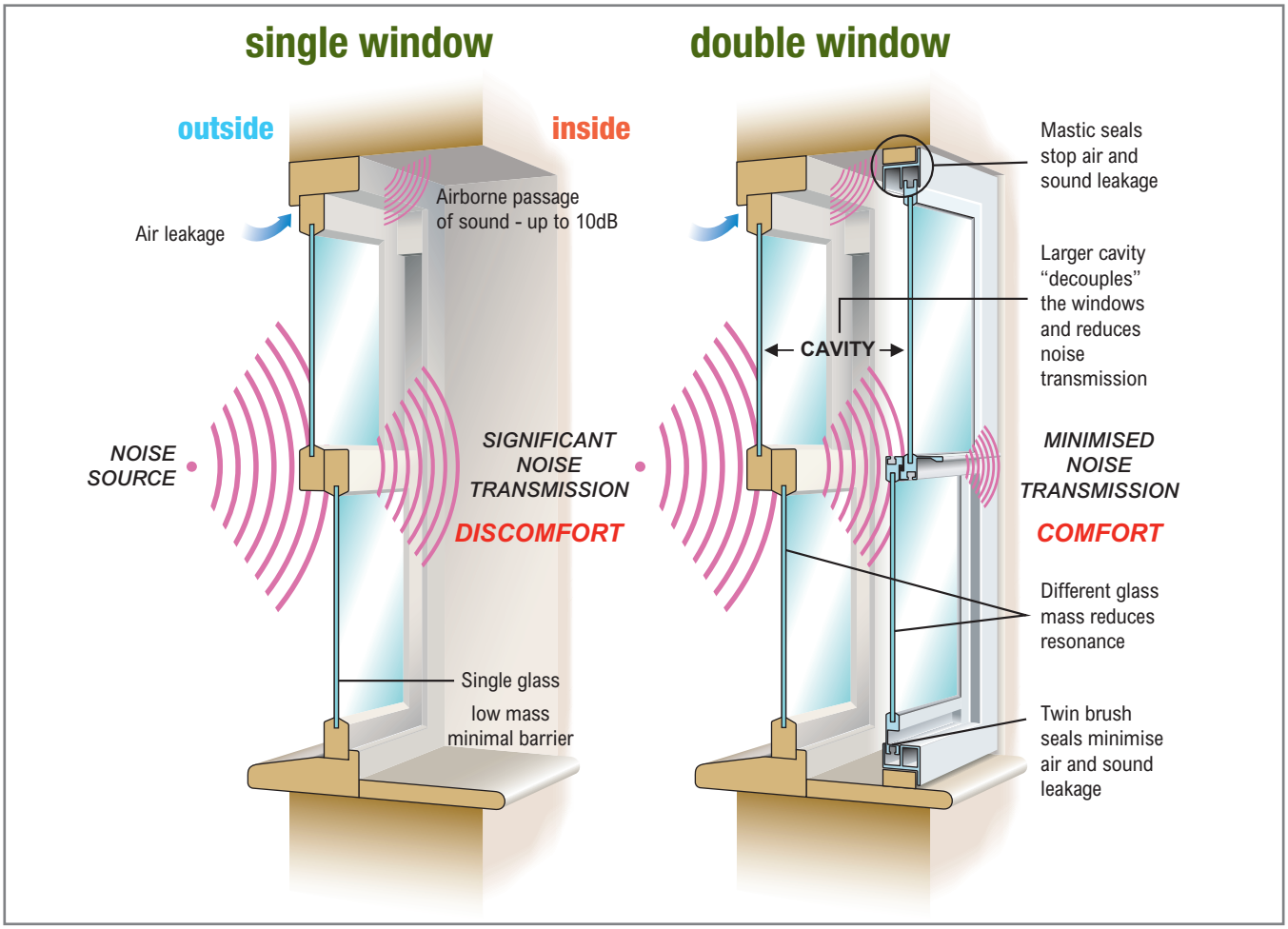
The inner and outer glass should have different mass to avoid the phenomenon of sympathetic resonance which will increase noise transmission. Thicker glass has greater mass and will provide better performance. Acoustic laminate glass shows improvements at higher frequencies and is particularly suited to dealing with aircraft noise.



Liners

Acoustic lining material between the window frames can raise insulation levels by 1-2dB and should be considered when noise levels are particularly high.

why consider secondary glazing?



Rw dB values for Selectaglaze Secondary Glazing Systems

Secondary Glazing	Series 10 HS	Series 20 VS	Series 30 LO	Series 41 SHC	Series 41 DSH	Series 40 FL	Series 45 SHC	Series 45 DSH	Series 45 FL	Series 46 FL	Series 50 SHC	Series 50 FL	Series 55 DFL	Series 60 TVS	Series 80 HS	Series 85 SHC	Series 90 VS	Series 95 VS
4mm	45	45	44	47	45	47	47	45	47					46				
6mm	45	45	44	47	45	47	47	45	47	47	46	47		46	46		46	
6.4mm	45	45	44	47	45	47	47	45	47					46	46		46	
6.8mm	46	46	45	48	46	48	48	46	48					47	47		47	
7.5mm				48	46	48					47	48	46		47		46	46
8mm	47	47	46	49	47	49	49	47	49					48	48		48	
8.8mm				49	47	49									48		48	
9.5mm				49	47	49				49	48	49	47		48	47	48	47
10mm				49	47	49									48		48	
10.8mm				50	48	50					49				49		48	
11.5mm				50	48	50				50	49	50	48		49	48	49	48
12mm				50	48	50									49		48	

Key: HS - Horizontal Sliding VS - Vertical Sliding TVS - Tilt-in Vertical Sliding SHC - Side Hung Casement DSH - Double Side Hung LO - Lift Out FL - Fixed Light DFL - Demountable Fixed Light

Refer to Selectaglaze Product Guide for full details

Selectaglaze systems used in control rooms or as part of a triple glazed assembly have achieved reductions up to 56 dB

Test Standards

Selectaglaze secondary window systems have been tested at The Taylor Woodrow Technology Centre in accordance with BS EN ISO 140-3:1995 "Laboratory measurement of airborne sound insulation of building elements". Certificate of Test Number 8049 – March 2006.
The results have been interpreted by Hann Tucker Associates, consultants in acoustics, to extrapolate and interpolate sound reduction values for the full range of Selectaglaze products. The table shows results for secondary windows set at a 200mm cavity with 6mm float glass in the Primary window. Figures are available for cavities set at 50mm, 100mm or 150mm and also 1/3rd octave Sound Reduction Index (R) values for each test.

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Assessed to ISO 9001: 2008
Certificate number 683

Police Preferred Specification

A Member of the
Glass and Glazing Federation