Acoustic Insulation

Most planning applications submitted to local authorities are assessed for the impact of environmental noise on a new development. They will carefully assess the area in which the development is planned to stipulate what insulation controls will be required in the construction to minimise impact from industrial activity, roads, aircraft etc.

This is especially important on residential developments where most authorities will measure the surrounding noise levels and will require windows to form part of an overall construction that will insulate the inside of a dwelling from external adverse noise. Many authorities will seek an overall insulation plan to ensure that the internal noise levels during the night do not exceed 35dB(A) to fall in line with the recommendation of the World Health Organisation.

Many organisations will also seek differing reductions at different frequency ranges to finely tune the acoustic insulation properties of the windows at frequencies to match that of surrounding adverse sources such as busy roads that take heavy goods vehicles regularly.

Where this type of analysis is required - then this can only be properly assessed in a laboratory condition by testing a window that matches the style and size of that to used on your project.

In regard to window design, the best results will always be obtained by introducing a secondary glazing window deeper into the reveal inside face. However, this is not often a practical solution or one that budget can allow.

Therefore, the double / triple glazing units housed within the Vision 3000 window must be carefully selected to increase insulation up to your required level.

There are many specialist acoustic insulating laminated glasses available from manufacturers and these will be used depending on clients' specification. Standard glasses can also give excellent sound reduction if used in the correct configurations.

The easiest and simplest way of determining the window sound insulation is to use the procedures from BS EN 14351-1 : 2006 Windows and Doors Product Standard, performance characteristics Annex B based on known manufacturers stated Glass Rw (dB) values.

Performance

Standard glas facades glass types
(refer to "Thermal Insulation" fact sheet)

Outer Pane	Air Space	Central Pane	Air Space	Inner Pane	Centre Pane U Value	Glass Rw From M/F	C	Ctr	Window Rw from table B.1	Glass Rw+Ctr	Window Rw+Ctr from table B.2	Window Rw (C;Ctr)
(mm)	(mm)	(mm)	(mm)	(mm)	(W/m²K)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
4	20			4	1.2 - 1.5*	32	na	na	34	na	na	34(na;na)
6	16			6	1.2 - 1.5*	33	na	na	34	na	na	34(na;na)
4	14	4	12	4	0.5 - 1.1*	33	na	na	34	na	na	34(na;na)
6	10	6	10	6	0.7 - 1.1*	33	na	na	34	na	na	34(na;na)

Suggested acoustically weighted glass types

Outer Pane	Air Space	Central Pane	Air Space	Inner Pane	Centre Pane U Value	Glass Rw From M/F	C	Ctr	Window Rw from table B.1	Glass Rw+Ctr	Window Rw+Ctr from table B.2	Window Rw (C;Ctr)
(mm)	(mm)	(mm)	(mm)	(mm)	(W/m²K)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
6	18			4	1.2 - 1.5*	35	-2	-5	35	30	31	35(-2;-5)
8	14			6	1.2 - 1.5*	36	-2	-5	36	31	31	36(-2;-5)
10	22			6	1.2 - 1.5*	40	-2	-5	38	35	33	38(-2;-5)

- * depending on type of gas filling and low E coatings - refer to "Thermal Insulation" fact sheet for full details
- selection of appropriate configuration should also take into account the required window sizes - refer to "Minimum and Maximum" fact sheet for full details
- na = data not available at time of going to press