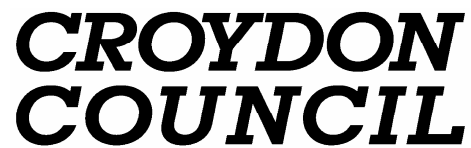


Environmental Services
Taberner House
Park Lane
Croydon
CR9 3BT
Telephone 020 8760 5483



GUIDANCE NOTE No GN.P120

Sound Insulation provided by Windows

The purpose of this Guidance Note is to provide information to developers, architects and others submitting plans for **residential developments** where sound insulation may be required for windows. A separate guidance note PN.G115 on sound insulation requirements for suspended ceilings and floating floors is also available.

1. Introduction

Most planning applications received by the Council are assessed for the impact of environmental noise on the new development. This to ensure that the proposed development has adequate sound insulation in order to minimise the adverse impact of noise from a railway or a busy road, aircraft or an industrial activity.

We will often measure outdoor noise on a proposed development site in order to determine if noise is likely to be a problem. Residential developments close to busy roads or railways will always need a noise assessment.

Generally, sound insulation can be incorporated to provide sufficient noise reduction to make a development suitable. It should be borne in mind, however, that daytime outdoor noise levels may not be acceptable for gardens or amenity space and that the site may therefore not be suitable even if adequate sound insulation is provided.

2. How to use this Guidance Note

The Council seeks to achieve sound levels based on the World Health Organisations guideline that indoor night-time noise levels should not exceed 35dB(A) and outdoor daytime noise levels should not exceed 55 dB(A).

When granting planning permission the Council may make it a condition that you achieve a certain level of sound insulation to the development by fitting double glazing in order to meet recommended noise levels.



INVESTOR IN PEOPLE
Environmental Health and Trading Standards



2001-2002
Town Centre Regeneration
Local Health Strategies

The table overleaf provides guidance on the types of windows that you can incorporate into the development in order to achieve the specified level of sound insulation. General information on the factors that affect sound insulation and ventilation implications are given in **Appendix 1**.

Sound Insulation of windows	
Description	Sound Insulation (average 100 Hz to 3150 Hz¹) in dB
Any type of window when open	Approx. 10
Ventilated window, staggered openings not more than 5% of the area	Up to 15
Ordinary single openable window closed but not weather stripped, <4mm glass	Up to 20
Single fixed or openable weather stripped (closed) window, with 4mm glass	Up to 25
Fixed single window with 10mm glass	Up to 30
Thermal double glazing units have the same acoustic performance as single glazing of the same total weight. Thermal glazing usually has an air gap of <25mm	Up to 30
Double openable windows*, weather stripped 100mm air space, one window 4mm glass, the other 6mm glass	Up to 35
Double openable windows*, weather stripped 150mm to 200mm air space, one window of 4mm glass the other window at least 6mm glass	Up to 40
Double window*, outer light fixed in resilient mounting, inner light fixed but removable, 200mm or more air space, absorbent reveals, 6mm and 10mm glass	Up to 45
*All double windows are taken as fitted in separate frames	

Source: British Standard Code of Practice for Sound Insulation and Noise reduction for Buildings BS 8233 : 1987

¹ The sound insulation of windows is usually measured in a laboratory over a frequency range that includes at least the sixteen 1/3 octave bands between 100 Hertz and 3150 Hertz, using the method given in BS 5821 : Part 1 1984

3. Are all of the requirements necessary?

In most cases we will ask for all of the details in this Guidance Note to be incorporated into a residential development.

If you are concerned about the need for all of the requirements set out in this Guidance Note to be included in your application, please speak to the Planning Officer dealing with your application on 020 8760 5403 (North Area) or 020 8760 5404 (South Area).

If you have an architect or agent, you may wish to pass a copy of the Guidance Note on to them so that the necessary details can be built into your plans if they are not already included.

If you would like to discuss any of the information contained in this Guidance Note, please contact a member of the Specialist Pollution Team on 020 8760 5483.

Factors that affect sound insulation

The simplest way to improve sound insulation provided by a window is to increase the thickness of the glass. A substantial improvement can be achieved by installing a second pane of glass to achieve a double leaf construction. In this case it is essential that the air gap between the panes is wide enough to give the required insulation at low frequencies (low frequency noise is usually associated with road noise). The wider the air gap the better the sound insulation.

- A secondary pane with a spacing of more than 50mm will achieve sound insulation of above 30 dB.
- For thermal double glazing a space between the two panes of less than 25mm will achieve up to 30dB reduction.

Additional factors which affect the sound insulation include: sealing, frame type, window pane size, reveal lining and ventilation openings. The importance of some of these factors is outlined here.

Generally, the larger the percentage of glazing of a building façade the poorer performance in terms of sound insulation. This is particularly emphasised with large single windows.

The use of absorbent reveal liner is beneficial to reduce the effect of high frequency noise, such as from aircraft.

As a note of guidance, different glass thickness' may be advisable in the two panes where road noise effects are important. Where high sound insulation of windows is required, airspace widths of greater than 100mm may be required. If you are in any doubt please contact the Environmental Health and Trading Standards Department for further advice.

Ventilation Implications

To provide adequate insulation against external noise it may be necessary to keep windows closed. In these circumstances it is important to consider the ventilation requirements of a dwelling.

To provide adequate means of ventilation for people in a building without compromising the sound insulation, alternative methods of providing ventilation and control of summertime temperatures must be considered. Ventilators have to be designed to provide adequate internal noise levels to protect the amenity of residents.

Windows must be closed to provide maximum sound insulation so mechanical ventilation may be necessary. The ventilation system must be designed to provide sufficient sound insulation not to degrade the insulation of the façade. It must be quiet in operation – e.g. 35dB(A) at maximum flow.

Ventilation units will generally limit insulation against external noise to about 38 dB(A). Sound attenuating mechanical ventilators are acoustically treated extract/intake fans. Other forms of ventilation may be suitable, e.g. acoustic airbricks, depending on the ventilation requirements.

Rather than opening a window, trickle ventilators are often used for background ventilation, however, they may not be sufficient where ventilation and high sound insulation are required e.g. next to a busy road or railway.