

# Noise reduction solutions using glazing

The following tables take the specified “Design Sound Level Range” for rooms from AS/NZS 2107: 2016, for various occupancies and activities, and lists the glass to be used to achieve the upper and lower sound level at the room side of the glass.

The standard provides a range for the “Design Sound Level” for a variety of occupancies and activities. The lower level of the range is the most desirable while the upper level should be seen as the least desirable.

The glass solution to achieve the lower level of the “Design Sound Level” range is found in the “Glass required to limit transmission to recommended design noise level” column of the table. This is the most desirable solution.

The glass solution to achieve the upper level of the “Design Sound Level” range is found in the “Glass required to limit transmission to maximum design noise level” column of the table. This is the least desirable solution.

The tables provide the solution for both traffic and aircraft noise for some of the building use designations shown in AS/NZS 2107: 2016. The attenuation of traffic noise in this table is represented by  $R_w+C_{tr}$  and aircraft noise is represented by  $R_w+C$ . These tables relate to the noise level at the room side of the glass not necessarily the noise level in the room because the level in the room is also influenced by other factors such as the roof, walls and floor, not just the glass in the windows.

It should be remembered the “Design Sound Levels” suggested in AS2107 may not necessarily be appropriate in all circumstances. There are various methods for analysing and finding a solution to a noise problem. An acoustic consultant is an authoritative source of information and advice for analysing and developing solutions to noise problems. Consideration should be given to employing their expertise.

| Type of Occupancy  | External Noise Level dB | Traffic Noise  |    |  |    | Aircraft Noise   |    |  |    |
|--|-------------------------|--|----|--|----|--|----|--|----|
|  |                         | Internal noise level (room side of glass)                              |    |  |    | Internal noise level (room side of glass)                              |    |  |    |
|  |                         | Glass required to limit transmission to recommended design noise level |    | Glass required to limit transmission to maximum design noise level |    | Glass required to limit transmission to recommended design noise level |    | Glass required to limit transmission to maximum design noise level |    |
|  |                         | dB   | dB | dB   | dB | dB   | dB | dB   |    |
| <b>Board Room</b><br>Design Sound Level Range 30dB to 40dB<br><br>(Recommended noise level in room = 30dB)<br>(Maximum suggested noise level permitted in room = 40dB) | 65                      | 10.5mm VLam Hush   | 30 | 4mm Float  | 37 | 6.5mm VLam Hush  | 30 | 4mm VFloat   | 36 |
|  | 70                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 6.38mm VLam  | 40 | 8mm VFloat + 16mm Gap + 10.5 VLam Hush                                 | 29 | 6.38mm VLam  | 38 |
|  | 75                      | 10mm VFloat + 200mm Gap + 6mm VFloat                                   | 30 | 10.5mm VLam Hush   | 40 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 6.5mm VLam Hush  | 40 |
|  | 80                      | No standard solution   | -  | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 40 | No standard solution   | -  | 8mm VFloat + 16mm Gap + 10.5 VLam Hush                             | 39 |
| <b>Cafeteria</b><br>Design Sound Level Range 45dB to 50dB<br><br>(Recommended noise level in room = 45dB)<br>(Maximum suggested noise level in room = 50dB)            | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 4mm VFloat   | 42 | 4mm VFloat   | 42 | 4mm VFloat   | 41 | 4mm VFloat   | 41 |
|  | 75                      | 6.38mm VLam  | 45 | 4mm VFloat   | 47 | 5mm VFloat   | 45 | 4mm VFloat   | 46 |
|  | 80                      | 10.5mm VLam Hush   | 45 | 6.38mm VLam  | 50 | 6.5mm VLam Hush  | 45 | 6.38mm VLam  | 48 |
| <b>Call Centre</b><br>Design Sound Level Range 40dB to 45dB<br><br>(Recommended noise level in room = 40dB)<br>(Maximum suggested noise level in room = 45dB)          | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 6.38mm VLam  | 38 | 4mm VFloat   | 41 |
|  | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 5mm VFloat   | 45 |
|  | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 10.5mm VLam Hush   | 45 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 39 | 6.5mm VLam Hush  | 45 |
| <b>Computer Room</b><br>Design Sound Level Range 45dB to 50dB<br><br>(Recommended noise level in room = 45dB)<br>(Maximum suggested noise level in room = 50dB)        | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 4mm VFloat   | 42 | 4mm VFloat   | 42 | 4mm VFloat   | 41 | 4mm VFloat   | 41 |
|  | 75                      | 6.38mm VLam  | 45 | 4mm VFloat   | 47 | 5mm VFloat   | 45 | 4mm VFloat   | 46 |
|  | 80                      | 10.5mm VLam Hush   | 45 | 6.38mm VLam  | 50 | 6.5mm VLam Hush  | 45 | 6.38mm VLam  | 48 |
| <b>Consulting Rooms</b><br>Design Sound Level Range 40dB to 45dB<br><br>(Recommended noise level in room = 40dB)<br>(Maximum suggested noise level in room = 45dB)     | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 6.38mm VLam  | 38 | 4mm VFloat   | 41 |
|  | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 5mm VFloat   | 45 |
|  | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 10.5mm VLam Hush   | 45 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 39 | 6.5mm VLam Hush  | 45 |

| Type of Occupancy  | External Noise Level dB | Traffic Noise  |    |  |    | Aircraft Noise   |    |  |    |
|--|-------------------------|--|----|--|----|--|----|--|----|
|  |                         | Internal noise level (room side of glass)                              |    |  |    | Internal noise level (room side of glass)                              |    |  |    |
|  |                         | Glass required to limit transmission to recommended design noise level | dB | Glass required to limit transmission to maximum design noise level | dB | Glass required to limit transmission to recommended design noise level | dB | Glass required to limit transmission to maximum design noise level | dB |
| <b>General Office Areas</b><br>Design Sound Level Range 40dB to 45dB<br><small>(Recommended noise level in room = 40dB)<br/>(Maximum suggested noise level in room = 45dB)</small> | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 6.38mm VLam  | 38 | 4mm VFloat   | 41 |
|  | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 5mm VFloat   | 45 |
|  | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 10.5mm VLam Hush   | 45 | 8mm VFloat + 16mm Gap + 10.5 VLam Hush                                 | 39 | 6.5mm VLam Hush  | 45 |
| <b>Executive Offices</b><br>Design Sound Level Range 35dB to 40dB<br><small>Recommended noise level in room = 35dB)<br/>(Maximum suggested noise level in room = 40dB)</small>     | 65                      | 6.38mm VLam  | 35 | 4mm VFloat   | 37 | 5mm VFloat   | 35 | 4mm VFloat   | 36 |
|  | 70                      | 10.5mm VLam Hush   | 35 | 6.38mm VLam  | 40 | 6.5mm VLam Hush  | 35 | 6.38mm VLam  | 38 |
|  | 75                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 35 | 10.5mm VLam Hush   | 40 | 8mm VFloat + 16mm Gap + 10.5 VLam Hush                                 | 34 | 6.5mm VLam Hush  | 40 |
|  | 80                      | 10mm VFloat + 200mm Gap + 6mm VFloat                                   | 35 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 40 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 35 | 8mm VFloat + 16mm Gap + 10.5 VLam Hush                             | 39 |
| <b>Reception Area</b><br>Design Sound Level Range 40dB to 45dB<br><small>(Recommended noise level in room = 40dB)<br/>(Maximum suggested noise level in room = 45dB)</small>       | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 6.38mm VLam  | 38 | 4mm VFloat   | 41 |
|  | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 5mm VFloat   | 45 |
|  | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 10.5mm VLam Hush   | 45 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 39 | 6.5mm VLam Hush  | 45 |
| <b>Lobby</b><br>Design Sound Level Range 45dB to 50dB<br><small>(Recommended noise level in room = 45dB)<br/>(Maximum suggested noise level in room = 50dB)</small>                | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 4mm VFloat   | 42 | 4mm VFloat   | 42 | 4mm VFloat   | 41 | 4mm VFloat   | 41 |
|  | 75                      | 6.38mm VLam  | 45 | 4mm VFloat   | 47 | 5mm VFloat   | 45 | 4mm VFloat   | 46 |
|  | 80                      | 10.5mm VLam Hush   | 45 | 6.38mm VLam  | 50 | 6.5mm VLam Hush  | 45 | 6.38mm VLam  | 48 |
| <b>General Offices</b><br>Design Sound Level Range 40dB to 45dB<br><small>(Recommended noise level in room = 40dB)<br/>(Maximum suggested noise level in room = 45dB)</small>      | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 6.38mm VLam  | 38 | 4mm VFloat   | 41 |
|  | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 5mm VFloat   | 45 |
|  | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 10.5mm VLam Hush   | 45 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 39 | 6.5mm VLam Hush  | 45 |

| Type of Occupancy   | External Noise Level dB | Traffic Noise  |    |  |    | Aircraft Noise   |    |  |    |
|---|-------------------------|--|----|--|----|--|----|--|----|
|   |                         | Internal noise level (room side of glass)                              |    |  |    | Internal noise level (room side of glass)                              |    |  |    |
|   |                         | Glass required to limit transmission to recommended design noise level | dB | Glass required to limit transmission to maximum design noise level | dB | Glass required to limit transmission to recommended design noise level | dB | Glass required to limit transmission to maximum design noise level | dB |
| <b>Airport Departure Lounge</b><br>Design Sound Level Range 45dB to 50dB<br><small>(Recommended noise level in room = 45dB)<br/>(Maximum suggested noise level in room = 50dB)</small>        | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|   | 70                      | 4mm VFloat   | 42 | 4mm VFloat   | 42 | 4mm VFloat   | 41 | 4mm VFloat   | 41 |
|   | 75                      | 6.38mm VLam  | 45 | 4mm VFloat   | 47 | 5mm VFloat   | 45 | 4mm VFloat   | 46 |
|   | 80                      | 10.5mm VLam Hush   | 45 | 6.38mm VLam  | 50 | 6.5mm VLam Hush  | 45 | 6.38mm VLam  | 48 |
| <b>Airport Passenger Check-in Area</b><br>Design Sound Level Range 45dB to 50dB<br><small>(Recommended noise level in room = 45dB)<br/>(Maximum suggested noise level in room = 50dB)</small> | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|   | 70                      | 4mm VFloat   | 42 | 4mm VFloat   | 42 | 4mm VFloat   | 41 | 4mm VFloat   | 41 |
|   | 75                      | 6.38mm VLam  | 45 | 4mm VFloat   | 47 | 5mm VFloat   | 45 | 4mm VFloat   | 46 |
|   | 80                      | 10.5mm VLam Hush   | 45 | 6.38mm VLam  | 50 | 6.5mm VLam Hush  | 45 | 6.38mm VLam  | 48 |
| <b>Art Gallery</b><br>Design Sound Level Range 40dB to 45dB<br><small>(Recommended noise level in room = 40dB)<br/>(Maximum suggested noise level in room = 45dB)</small>                     | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|   | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 6.38mm VLam  | 38 | 4mm VFloat   | 41 |
|   | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 5mm VFloat   | 45 |
|   | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 10.5mm VLam Hush   | 45 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 39 | 6.5mm VLam Hush  | 45 |
| <b>Exhibition Areas</b><br>Design Sound Level Range 40dB to 50dB<br><small>(Recommended noise level in room = 40dB)<br/>(Maximum suggested noise level in room = 50dB)</small>                | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|   | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 5mm VFloat   | 40 | 4mm VFloat   | 41 |
|   | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 4mm VFloat   | 46 |
|   | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 10.5mm VLam Hush   | 45 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 39 | 6.38mm VLam  | 48 |
| <b>Place of Worship</b><br>Design Sound Level Range 30dB to 40dB<br><small>(Recommended noise level in room = 30dB)<br/>(Maximum suggested noise level in room = 40dB)</small>                | 65                      | 10.5mm VLam Hush   | 30 | 4mm VFloat   | 40 | 6.5mm VLam Hush  | 30 | 4mm VFloat   | 36 |
|   | 70                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 6.38mm VLam  | 40 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 29 | 5mm VFloat   | 40 |
|   | 75                      | 10mm VFloat + 200mm Gap + 6mm VFloat                                   | 30 | 10.5mm VLam Hush   | 40 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 6.5mm VLam Hush  | 40 |
|   | 80                      | No standard solution   | -  | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 40 | No standard solution   | -  | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                           | 39 |

| Type of Occupancy  | External Noise Level dB | Traffic Noise  |    |  |    | Aircraft Noise   |    |  |    |
|--|-------------------------|--|----|--|----|--|----|--|----|
|  |                         | Internal noise level (room side of glass)                              |    |  |    | Internal noise level (room side of glass)                              |    |  |    |
|  |                         | Glass required to limit transmission to recommended design noise level | dB | Glass required to limit transmission to maximum design noise level | dB | Glass required to limit transmission to recommended design noise level | dB | Glass required to limit transmission to maximum design noise level | dB |
| <b>Court Room</b><br>Design Sound Level Range 30dB to 35dB<br><small>(Recommended noise level in room = 30dB)<br/>(Maximum suggested noise level in room = 35dB)</small>                             | 65                      | 10.5mm VLam Hush   | 30 | 6.38 VLam  | 35 | 6.5mm VLam Hush  | 30 | 5mm Float  | 35 |
|  | 70                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 10.5mm VLam Hush   | 35 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 29 | 6.5mm VLam Hush  | 35 |
|  | 75                      | 10mm VFloat+ 200mm Gap + 6mm VFloat                                    | 30 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 35 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                           | 34 |
|  | 80                      | No standard solution   | -  | 10mm VFloat + 200mm Gap + 6mm VFloat                               | 35 | No standard solution   | -  | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 35 |
| <b>Library Reading Area</b><br>Design Sound Level Range 40dB to 45dB<br><small>(Recommended noise level in room = 40dB)<br/>(Maximum suggested noise level in room = 45dB)</small>                   | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 5mm VFloat   | 40 | 4mm VFloat   | 41 |
|  | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 5mm VFloat   | 45 |
|  | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 10.5mm VLam Hush   | 45 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 39 | 6.5mm VLam Hush  | 45 |
| <b>Museum Exhibition Area</b><br>Design Sound Level Range 40dB to 45dB<br><small>(Recommended noise level in room = 40dB)<br/>(Maximum suggested noise level in room = 45dB)</small>                 | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 5mm VFloat   | 38 | 4mm VFloat   | 41 |
|  | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 5mm VFloat   | 45 |
|  | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 10.5mm VLam Hush   | 45 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 39 | 6.5mm VLam Hush  | 45 |
| <b>Post Offices and General Banking Areas</b><br>Design Sound Level Range 45dB to 50dB<br><small>(Recommended noise level in room = 45dB)<br/>(Maximum suggested noise level in room = 50dB)</small> | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 4mm VFloat   | 42 | 4mm VFloat   | 42 | 4mm VFloat   | 41 | 4mm VFloat   | 41 |
|  | 75                      | 6.38mm VLam  | 45 | 4mm VFloat   | 47 | 6.38mm VLam  | 43 | 4mm VFloat   | 46 |
|  | 80                      | 10.5mm VLam Hush   | 45 | 6.38mm VLam  | 50 | 6.5mm VLam Hush  | 45 | 6.38mm VLam  | 48 |
| <b>Railway and Bus Terminal Ticket Areas</b><br>Design Sound Level Range 45dB to 50dB<br><small>(Recommended noise level in room = 45dB)<br/>(Maximum suggested noise level in room = 50dB)</small>  | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|  | 70                      | 4mm VFloat   | 42 | 4mm VFloat   | 42 | 4mm VFloat   | 41 | 4mm VFloat   | 41 |
|  | 75                      | 6.38mm VLam  | 45 | 6.38mm VLam  | 45 | 6.38mm VLam  | 43 | 4mm VFloat   | 46 |
|  | 80                      | 10.5mm VLam Hush   | 45 | 6.38mm VLam  | 50 | 6.5mm VLam Hush  | 45 | 6.38mm VLam  | 48 |

| Type of Occupancy   | External Noise Level dB | Traffic Noise  |    |  |    | Aircraft Noise   |    |  |    |
|---|-------------------------|--|----|--|----|--|----|--|----|
|   |                         | Internal noise level (room side of glass)                              |    |  |    | Internal noise level (room side of glass)                              |    |  |    |
|   |                         | Glass required to limit transmission to recommended design noise level | dB | Glass required to limit transmission to maximum design noise level | dB | Glass required to limit transmission to recommended design noise level | dB | Glass required to limit transmission to maximum design noise level | dB |
| <b>Restaurants, and Coffee shops</b><br>Design Sound Level Range 40dB to 50dB<br><small>(Recommended noise level in room = 40dB)<br/>(Maximum suggested noise level in room = 50dB)</small>                         | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|   | 70                      | 6.38mm VLam  | 40 | 4mm VFloat   | 42 | 5mm VFloat   | 38 | 4mm VFloat   | 41 |
|   | 75                      | 10.5mm VLam Hush   | 40 | 6.38mm VLam  | 45 | 6.5mm VLam Hush  | 40 | 4mm VFloat   | 46 |
|   | 80                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 40 | 6.38mm VLam  | 50 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 39 | 6.38mm VLam  | 48 |
| <b>Coffee Bars</b><br>Design Sound Level Range 45dB to 50dB<br><small>(Recommended noise level in room = 45dB)<br/>(Maximum suggested noise level in room = 50dB)</small>   | 65                      | 4mm VFloat   | 37 | 4mm VFloat   | 37 | 4mm VFloat   | 36 | 4mm VFloat   | 36 |
|   | 70                      | 4mm VFloat   | 42 | 4mm VFloat   | 42 | 4mm VFloat   | 41 | 4mm VFloat   | 41 |
|   | 75                      | 6.38mm VLam  | 45 | 6.38mm VLam  | 45 | 6.38mm VLam  | 43 | 4mm VFloat   | 46 |
|   | 80                      | 10.5mm VLam Hush   | 45 | 6.38mm VLam  | 50 | 6.5mm VLam Hush  | 45 | 6.38mm VLam  | 48 |
| <b>Houses and Apartments near minor roads Sleeping Areas</b><br>Design Sound Level Range 30dB to 35dB<br><small>(Recommended noise level in room = 30dB)<br/>(Maximum suggested noise level in room = 35dB)</small> | 65                      | 10.5mm VLam Hush   | 30 | 6.38 VLam  | 35 | 6.5mm VLam Hush  | 30 | 5mm VFloat   | 35 |
|   | 70                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 10.5mm VLam Hush   | 35 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 29 | 6.5mm VLam Hush  | 35 |
|   | 75                      | 10mm VFloat+ 200mm Gap + 6mm VFloat                                    | 30 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 35 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                           | 34 |
|   | 80                      | No standard solution   | -  | 10mm VFloat + 200mm Gap + 6mm VFloat                               | 35 | No standard solution   | -  | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 35 |
| <b>Houses and Apartments near minor roads Living Areas</b><br>Design Sound Level Range 30dB to 40dB<br><small>(Recommended noise level in room = 30dB)<br/>(Maximum suggested noise level in room = 40dB)</small>   | 65                      | 10.5mm VLam Hush   | 30 | 4mm VFloat   | 37 | 6.5mm VLam Hush  | 30 | 4mm VFloat   | 36 |
|   | 70                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 6.38mm VLam  | 40 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 29 | 5mm VFloat   | 40 |
|   | 75                      | 10mm VFloat+ 200mm Gap + 6mm VFloat                                    | 30 | 10.5mm VLam Hush   | 40 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 6.5mm VLam Hush  | 40 |
|   | 80                      | No standard solution   | -  | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 40 | No standard solution   | -  | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                           | 39 |
| <b>Houses and Apartments near major roads Sleeping Areas</b><br>Design Sound Level Range 35dB to 40dB<br><small>(Recommended noise level in room = 35dB)<br/>(Maximum suggested noise level in room = 40dB)</small> | 65                      | 6.38mm VLam  | 35 | 4mm Float  | 37 | 5mm VFloat   | 35 | 4mm VFloat   | 36 |
|   | 70                      | 10.5mm VLam Hush   | 35 | 6.38mm VLam  | 40 | 6.5mm VLam Hush  | 35 | 5mm VFloat   | 38 |
|   | 75                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 35 | 10.5mm VLam Hush   | 40 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 34 | 6.5mm VLam Hush  | 40 |
|   | 80                      | 10mm VFloat+ 200mm Gap + 6mm VFloat                                    | 35 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 40 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 35 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                           | 39 |

| Type of Occupancy  | External Noise Level dB | Traffic Noise  |    |  |    | Aircraft Noise   |    |  |    |
|--|-------------------------|--|----|--|----|--|----|--|----|
|  |                         | Internal noise level (room side of glass)                              |    |  |    | Internal noise level (room side of glass)                              |    |  |    |
|  |                         | Glass required to limit transmission to recommended design noise level |    | Glass required to limit transmission to maximum design noise level | dB | Glass required to limit transmission to recommended design noise level | dB | Glass required to limit transmission to maximum design noise level | dB |
| <b>Houses and Apartments near major roads</b><br><b>Living Areas</b><br><b>Design Sound Level Range 35dB to 45dB</b><br><small>(Recommended noise level in room = 35dB)</small><br><small>(Maximum suggested noise level in room = 45dB)</small> | 65                      | 6.38mm VLam  | 35 | 4mm VFloat   | 37 | 5mm VFloat   | 35 | 4mm VFloat   | 36 |
|  | 70                      | 10.5mm VLam Hush   | 35 | 4mm VFloat   | 42 | 6.5mm VLam Hush  | 35 | 4mm VFloat   | 41 |
|  | 75                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 35 | 6.38mm VLam  | 45 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 34 | 6.38mm VLam  | 43 |
|  | 80                      | 10mm VFloat+ 200mm Gap + 6mm VFloat                                    | 35 | 10.5mm VLam Hush   | 45 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 35 | 6.5mm VLam Hush  | 45 |
| <b>Hotels and Motels near minor roads</b><br><b>Sleeping areas</b><br><b>Design Sound Level Range 30dB to 35dB</b><br><small>(Recommended noise level in room = 30dB)</small><br><small>(Maximum suggested noise level in room = 35dB)</small>   | 65                      | 10.5mm VLam Hush   | 30 | 6.38mm VLam  | 35 | 6.5mm VLam Hush  | 30 | 5mm VFloat   | 35 |
|  | 70                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 10.5mm VLam Hush   | 35 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 29 | 6.5mm VLam Hush  | 35 |
|  | 75                      | 10mm VFloat+ 200mm Gap + 6mm VFloat                                    | 30 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 35 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 30 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                           | 34 |
|  | 80                      | No standard solution   | -  | 10mm VFloat+ 200mm Gap + 6mm VFloat                                | 35 | No standard solution   | -  | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 35 |
| <b>Hotels and Motels near major roads</b><br><b>Sleeping Areas</b><br><b>Design Sound Level Range 35dB to 40dB</b><br><small>(Recommended noise level in room = 35dB)</small><br><small>(Maximum suggested noise level in room = 40dB)</small>   | 65                      | 6.38mm VLam  | 35 | 4mm VFloat   | 37 | 5mm VFloat   | 35 | 4mm VFloat   | 36 |
|  | 70                      | 10.5mm VLam Hush   | 35 | 6.38mm VLam  | 40 | 6.5mm VLam Hush  | 35 | 5mm VFloat   | 40 |
|  | 75                      | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 35 | 10.5mm VLam Hush   | 40 | 8mm VFloat + 16mm Gap + 10.5mm VLam Hush                               | 34 | 6.5mm VLam Hush  | 40 |
|  | 80                      | 10mm VFloat+ 200mm Gap + 6mm VFloat                                    | 35 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                      | 40 | 8.5mm VLam Hush + 16mm Gap + 12.5mm VLam Hush                          | 35 | 8mm VFloat + 16mm Gap + 10.5 VLam Hush                             | 39 |

