**SGG STADIP SILENCE®**

**SGG STADIP SILENCE®, SGG CLIMALIT SILENCE, SGG CLIMAPLUS SILENCE... Weighty arguments for restoring silence!**

**SGG STADIP SILENCE®, acoustic laminated glass**

This is the ideal solution for enhanced insulation against both airborne and impact noise. It provides exceptional levels of sound insulation whilst maintaining the safety and security properties of laminated glass.

**SGG CLIMALIT SILENCE and SGG CLIMAPLUS SILENCE**

are double glazing products designed to effectively improve interior comfort, by providing a high level of performance in acoustic insulation, thermal insulation and security. **SGG CLIMAPLUS SILENCE** provides enhanced thermal insulation through the combination of the Silence interlayer with a low-emissivity glass such as **SGG PLANITHERM FUTUR N**. The low-e coating has the effect of reflecting radiated heat back into the room and saves on energy wastage. By replacing the air in the unit’s cavity with an inert gas such as argon, this heat insulating effect can be further improved.
A real danger to health

In today’s world, more and more people are suffering from noise overload. Solving this problem is one of the biggest challenges for those responsible for our living and working environments.

• Noise generates stress: “From a noise level of 60 dB(A) and above, symptoms of stress can begin to appear: sleep loss, decline in psycho-motor and intellectual performance.” (Prof. Lehman, Max Planck Institute).

• ... and cardiac problems. The Berlin Institute for Water, Soil and Air Hygiene reveals that individuals exposed to average noise levels above 65 dB(A) during the day - one-sixth of the German population - have a 20% higher risk of heart attack.

• Sustained exposure to noise and disturbing sounds also means that the body produces a steady stream of adrenaline, a state that can lead to hypertension, psychological problems and sexual dysfunction (Time, July 98).

Noise and children

A study conducted in Munich shows that children attending a school near the airport had a reduced cognitive ability in the area of memory and language comprehension (Psychological Science 1995, 1998).

A problem of pollution

Paradoxically, although there is a world-wide battle to combat certain specific forms of pollution, the deterioration in the quality of life due to noise pollution is steadily increasing.

• 65% of the European population is regularly exposed to noise intensities above 55 dB(A) and 16% to more than 65 dB (European Environment Agency).

• Noise abatement measures for cars are offset by the growth in traffic and the development of leisure activities (European Commission: Future noise policy, 4/11/1996).

We can act!

It is difficult to act solely against the sources of noise, but it is possible to strongly reduce the penetration of noise within our homes. Studies conducted in various countries prove that Europeans are ready to invest to protect themselves against noise.

The population is not willing to economise on:

4 out of 10 French people are willing to invest in insulation for their home:

13% from 152 to 762 €
11% from 762 to 1,524 €
10% from 1,524 to 7,622 €
(L’Entrepreneur no. 159, April 2000)

Noise is bad for your health
The problem

Windows are the weak link in acoustic insulation

The critical frequency causes an unwanted acoustic peak

The law of mass states that the thicker the glass, the weaker the noise transmitted. A second law states that transmitted noise decreases as we pass from low to higher frequencies. This is true up to a certain level, called the critical frequency. At this point everything is reversed. It is as if the glass suddenly develops a hole through which noise can pass freely.

Conventional products are no solution

With single glazing, increasing the glass thickness doesn’t help. The acoustic peak just moves to lower frequencies. Laminated glazing with an ordinary PVB interlayer is also unable to significantly reduce this peak effect.

With symmetric double glazing the effect is even worse! With two panes of the same thickness the acoustic peaks are superimposed and serve to strengthen each other. In addition a mass-spring-mass resonance point appears at low frequencies.

Legend details

8 mm, 10 mm etc. Thickness in mm of the monolithic glass.

4/12/4: Double glazing comprising one pane of glass, a 12mm air cavity and one pane glass.

10/12/4: A laminated glass made up of two sheets of glass bonded together with two or three PVB interlayers.

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**SGG STADIP SILENCE**: THE solution to the problem of critical frequency

*The best acoustic performance*

SGG STADIP SILENCE is a laminated glass developed by SAINT-GOBAIN GLASS with a special acoustic PVB interlayer, PVB Silence®. PVB Silence acts like a dampening core between the two panes of glass. It prevents vibration, eliminating the problem of the critical frequency and thus the acoustic peaks at high frequencies. SGG STADIP SILENCE is a patented and unique product that offers exceptional levels of acoustic comfort.

SGG STADIP SILENCE®:

**THE perfect solution to airborne noise**

*All the advantages of SGG STADIP®, standard PVB laminated glass*

- The industrial production of SGG STADIP SILENCE ensures reliable, consistent and controlled quality.
- SGG STADIP SILENCE has passed all durability tests.
- SGG STADIP SILENCE can be combined easily in double glazing with all types of glass, including coated glass (solar control, thermal insulation etc).
- SGG STADIP SILENCE provides optimum optical quality.
- SGG STADIP SILENCE is easy to use: available in large sizes (max. 3.2m by 6m), it can be handled, cut, shaped and assembled like SGG STADIP.

*And an extra benefit!*

SGG STADIP SILENCE is a laminated glass. Like SGG STADIP it therefore helps to enhance security in the event of breakage, attempted break-ins or vandalism, in return for a very modest additional cost. This ‘extra’ means that traditional acoustic products simply cannot compete.

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### Tests carried out according to European Norm EN 563* at official test laboratories in Ulm (Germany).

<table>
<thead>
<tr>
<th>Class</th>
<th>Ball drops of 4.1 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2a</td>
<td></td>
</tr>
<tr>
<td>SGG STADIP SILENCE 44.4 (8.8)</td>
<td>P2a</td>
</tr>
<tr>
<td>SGG STADIP SILENCE 44.4 (9.5)</td>
<td>P2a</td>
</tr>
<tr>
<td>SGG STADIP SILENCE SP 550</td>
<td>P2a</td>
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* Glass in backing - security glazing - testing and classification of resistance to manual attack.
**Impact Noise**

SGG STADIP SILENCE®: THE solution for impact noise on roofs

Moderate the noise from rain with the help of SGG STADIP SILENCE®

The use of glass in overhead applications is becoming more and more common. This creates, however, spaces which are sensitive to impact noise from rain and hail. Trials carried out by a university laboratory(1) in which different types of glazing were submitted to artificial rain have produced very positive results for SGG STADIP SILENCE, both in single and in double glazed form.

Double glazing containing a pane of SGG STADIP SILENCE performs better by 6 dB than one with an ordinary PVB interlayer. For optimum effectiveness two panes of SGG STADIP SILENCE should be used with 0.76 mm interlayers to provide an additional gain of 7 dB!

It is worth noting that acoustic resin laminated glasses are not suitable for overhead applications due to safety requirements.

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(1) Study by Prof. Vermeir, Louvain University, Belgium
SGG STADIP SILENCE®: THE clear acoustic solution for interiors

The use of glass in partitions is becoming significantly more apparent. This is due to both the extensive decorative possibilities that glass brings to interior design as well as flexibility and ease of use. Here too SGG STADIP SILENCE proves to be the optimum glazing solution, combining all the benefits of glass with safety and superior acoustic performance.
The compositions

**SGG CLIMALIT® SILENCE and SGG CLIMAPLUS® SILENCE:** acoustic and thermal insulation combined

**A fully flexible solution**

Double-glazing is now standard in most sectors of the construction market. With its SGG CLIMALIT and SGG CLIMAPLUS ranges, SAINT-GOBAIN GLASS offers a group of products that can be tailored to combine both acoustic and thermal insulation. Other functions such as enhanced security and solar control can also be added, enabling you to meet the most demanding of performance specifications.

**The ideal composition for noise prevention**

The best acoustic performance is achieved with asymmetric double glazing, incorporating at least one leaf of SGG STADIP SILENCE. The choice of composition will depend on the source of noise confronting you. The diagram below shows the sources of noise which we find most annoying, in descending order. The two graphs opposite show how effective SGG STADIP SILENCE is in comparison to standard PVB for each of the two main noise sources - road traffic and air traffic.

**Complaints from the German population (1994) concerning noise**


If higher levels of acoustic insulation against airborne noise are required we would recommend using either a 55.2 (10.8 mm)/16 argon/44.2 (8.8 mm) SGG CLIMAPLUS SILENCE (Rw 46 dB (-2;-6)) or a 55.2 (10.8 mm)/20 argon/44.2 (8.8 mm) SGG CLIMALIT SILENCE (Rw 47 dB (-2;-7)):

- 16 to 17 dB better in Rw
- 14 to 15 dB better in Rw + C
- 13 dB better in Rw + C_{tr}
- More than 30 dB better in the area of the critical frequency, when compared with a standard 4/12/4 double-glazed unit!
In order to achieve exceptionally high levels of acoustic insulation, without significantly increasing the weight and thickness of the unit, SAINT-GOBAIN GLASS has developed and tested different compositions of SGG CLIMAPLUS SILENCE.

**INSTALLATION**

SGG STADIP SILENCE must be installed in accordance with current national regulations and our special guidelines in particular concerning the following areas:

- **Overhead applications**
- **Air and water tightness**
- **Thermal stress**

Placing a direct heat source in close proximity of the glass should be avoided (spotlight, radiator etc) as they may create localised overheating. Similarly, avoid covering the inside face of external glazing with excessive notices/labelling, lettering, etc.

Please ensure that SGG STADIP SILENCE is not exposed to temperatures exceeding 60°C, for prolonged periods.

### Performance details for SGG CLIMALIT SILENCE and SGG CLIMAPLUS SILENCE double-glazing

<table>
<thead>
<tr>
<th>Composition</th>
<th>Total thickness (mm)</th>
<th>Weight (kg/m²)</th>
<th>Rw</th>
<th>Ra</th>
<th>Ra,tr</th>
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</thead>
<tbody>
<tr>
<td>64.2(10.8) SGG STADIP SILENCE/20 air/64.2(8.8) SGG STADIP SILENCE</td>
<td>40</td>
<td>47</td>
<td>47</td>
<td>45</td>
<td>40</td>
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<tr>
<td>10/4(6.4) SGG STADIP SILENCE</td>
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<td>46</td>
<td>44</td>
<td>42</td>
<td>40</td>
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<tr>
<td>33.1(6.4) SGG STADIP SILENCE/16 argon/16</td>
<td>28</td>
<td>35</td>
<td>40</td>
<td>38</td>
<td>34</td>
</tr>
</tbody>
</table>

* From the IWA Laboratory, Germany

The values of the sound reduction indices have been measured in acoustic laboratories, in conditions according to EN ISO 140. These values may vary from one laboratory to another.

These configurations of unit are particularly well suited to use in urban areas where sound intensity levels can be superior to 70dBA. SGG CLIMALIT SILENCE and SGG CLIMAPLUS SILENCE sealed units when glazed into performant framing systems, allow the installer to meet the most demanding acoustic insulation levels for the façade.
Distributor