



PILKINGTON
NSG Group Flat Glass Business

Pilkington **Optiphon™**

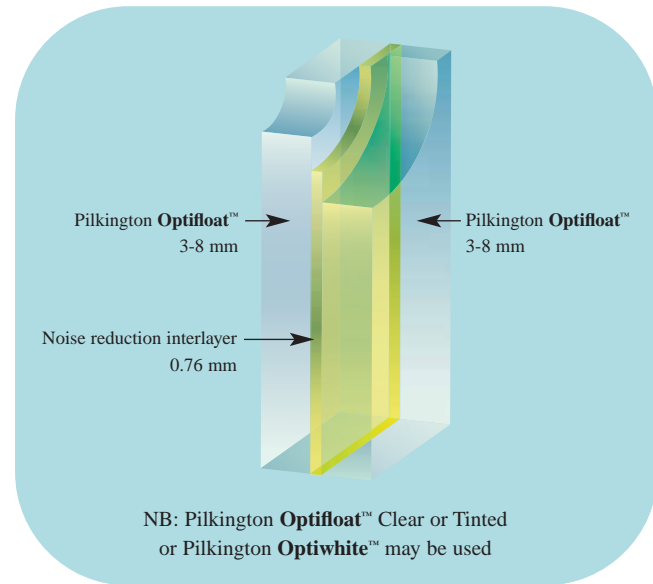
Pilkington **Optiphon**[™] – Laminated glass for transparent noise insulation.

With increasing traffic on the road, rail and in the air, noise insulation has become a very important topic. It is not a question of it being a luxury anymore it is essential that noise reduction is considered in the specification of the glazing. With regard to employment law, comfort and medical necessity, noise insulation in building construction is an undisputed requirement to decrease stress- and noise-related illnesses.

Pilkington **Optiphon**[™] is the ideal choice of glass in situations where there is excess noise from road, rail or air traffic, or various other sources, for example factories or nightclubs.

By using a special PVB (PolyVinyl Butyral) interlayer, Pilkington **Optiphon**[™] is a high quality acoustic laminated glass that offers excellent noise reduction without compromising on light transmittance or impact performance.

The desired acoustic performance can be achieved through combining various thicknesses of glass with a PVB interlayer. With a large variety of product combinations, Pilkington **Optiphon**[™] offers the opportunity to achieve specific noise reduction requirements.



Benefits

- Special PVB interlayer for enhanced sound insulation performance
- A thinner and lighter glass for the equivalent acoustic performance
- Available in jumbo and lehr end sizes
- All products achieve at least safety class 1(B)1 (EN 12600) and are available to meet security glass grades contained in EN 356
- A high acoustic performance can be achieved when used in Insulating Glass Units (IGUs)
- Can also be used to improve noise insulation in a triple glazing construction

Pilkington **Optiphon**[™] can be combined with other Pilkington products for a multi-functional noise-reduction monolithic glass or a multi-functional noise-reduction IGU providing additional benefits, such as:

- thermal insulation with Pilkington **K Glass**[™] / / Pilkington **Optitherm**[™] (coating in position 3 in IGU)
- solar control with Pilkington **Suncool**[™] (coating in position 2 in IGU)
- self-cleaning with Pilkington **Activ**[™] (coating in position 1 in IGU)



Technical Definitions

Sound Reduction Index

R_w is the weighted sound reduction, in decibels, which incorporates a correction for the ear's response.

C and C_{tr} are the spectrum adjustments, which are the values added to R_w to take account of the characteristics of particular sound spectra. Typical noise sources for each spectrum adaptation terms are given below.

Relevant spectrum adaptation term C

Type of noise source:

- Living activities (talking, music, radio, TV)
- Children playing
- Railway traffic at medium and high speed
- Jet aircraft, short distance away
- motorway traffic >50 mph
- Factories emitting mainly medium and high frequency noise.



Relevant spectrum adaptation term C_{tr}

Type of noise source:

- Urban road traffic
- Railway traffic at low speeds
- Aircraft, propeller driven
- Jet aircraft, long distance away
- Disco music
- Factory emitting mainly low and medium frequency noise.



This publication gives a general description of the products and materials. It is the responsibility of the users to ensure that their use is appropriate for any particular application and that such application complies with all relevant local and national legislation, standards, codes of practice and other requirements.

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CE marking confirms that a product complies with its relevant harmonised European Norm.
The CE marking label for each product, including declared values, can be found at www.pilkington.com/CE



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Pilkington Optiphon™

	dB sound reduction index by octave band – Hz						R _w (C:C _{tr})	R _w	R _w +C	R _w +C _{tr}
	125	250	500	1000	2000	4000				

Configuration single glazing

6.8 mm Pilkington Optiphon™	21	26	31	35	37	38	35(-1;-3)	35	34	32
8.8 mm Pilkington Optiphon™	24	28	34	38	37	43	37(-1;-4)	37	36	33
10.8 mm Pilkington Optiphon™	28	31	36	38	39	47	38(-1;-2)	38	37	36
12.8 mm Pilkington Optiphon™	30	32	37	39	41	51	39(-0;-2)	39	39	37
16.8 mm Pilkington Optiphon™	29	34	37	39	46	55	40(-0;-2)	40	40	38

Configuration Insulating Glass Unit (IGU), thickness in mm

6 / 6 to 20 mm / 6.8 Pilkington Optiphon™	23	24	34	42	43	52	38(-2;-5)	38	36	33
6 / 6 to 20 mm / 8.8 Pilkington Optiphon™	24	26	40	48	46	54	41(-3;-7)	41	38	34
6 / 6 to 20 mm / 10.8 Pilkington Optiphon™	23	28	41	47	45	55	42(-3;-7)	42	39	35
6 / 6 to 20 mm / 12.8 Pilkington Optiphon™	20	29	43	47	46	49	42(-3;-8)	42	39	34
8.8 Pilkington Optiphon™ / 6 to 20 mm / 12.8 Pilkington Optiphon™	26	36	46	50	52	63	47(-2;-7)	47	45	40
16.8 Pilkington Optiphon™ / 6 to 20 mm / 16.8 Pilkington Optiphon™	29	40	45	47	54	68	48(-2;-6)	48	46	42

The above IGUs with Pilkington **K Glass™** on one pane and a 16 mm 90 % Argon-filled cavity achieve a U value of 1.5 W/m² K

Further information on solar and thermal performance is available on the Pilkington website using the Spectrum program: www.pilkington.com/spectrum

Impact classification EN12600 Class 1(B)1 for all above Pilkington **Optiphon™** products

R_w(C:C_{tr}) are in accordance with EN717-1

Non Pilkington Optiphon™ glass products. Figures from BS EN 12354

	dB sound reduction index by octave band – Hz						R _w (C:C _{tr})	R _w	R _w +C	R _w +C _{tr}
	125	250	500	1000	2000	4000				

Configuration single glazing

4 mm Float Glass	17	20	26	32	33	26	29(-2;-3)	29	27	26
6 mm Float Glass	18	23	30	35	27	32	31(-2;-3)	31	29	28
8 mm Float Glass	20	24	29	34	29	37	32(-2;-3)	32	30	29
10 mm Float Glass	23	26	32	31	32	39	33(-2;-3)	33	31	30
12 mm Float Glass	27	29	31	32	38	47	34(-0;-2)	34	34	32

Configuration Insulating Glass Unit (IGU), Float glass, thickness in mm

4 / 6 to 20 mm / 4	21	17	25	35	37	31	29(-1;-4)	29	28	25
6 / 6 to 20 mm / 6	20	18	28	38	34	38	31(-1;-4)	31	30	27
6 / 6 to 20 mm / 4	21	20	26	38	37	39	32(-2;-4)	32	30	28
10 / 6 to 20 mm / 4	24	21	32	37	42	43	35(-2;-5)	35	33	30
10 / 6 to 20 mm / 6	24	24	32	37	37	44	35(-1;-3)	35	34	32

Note that these are conservative figures and cover all products by European glass manufacturers.

R_w = Weighted sound reduction. This scale allows for the response of the human ear and could be used for determining a suitable product to reduce noise such as voices.

C = An adjustment to the R_w scale that could be used for selecting a product to reduce noise from music, radio, tv, high speed traffic and other medium to high frequencies.

C_{tr} = An adjustment to the R_w scale that could be used for selecting a product to reduce noise from urban road traffic, disco music and other noises with a large component of low frequencies.

Note that a 3 dB difference is barely discernable, 5 dB is clearly discernable and 10 dB is a doubling or halving of the noise.



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