



Pilkington Spacia™

Vacuum Glazing



PILKINGTON

NSG Group Flat Glass Business

Pilkington Spacia™. The world's first commercially-available vacuum glazing.

Pilkington **Spacia™** offers the thermal performance of conventional double glazing in only the same thickness as single glass.

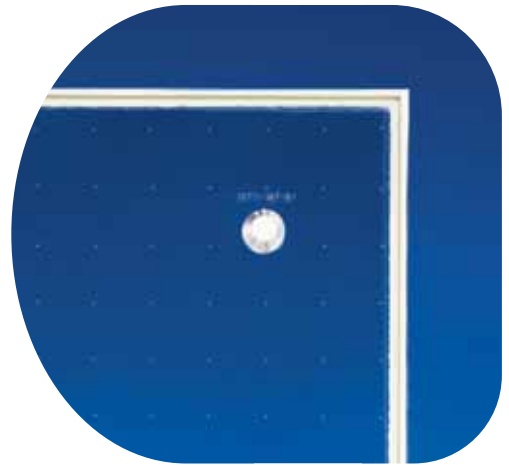
Pilkington **Spacia™** provides a real solution to the problems of balancing historical preservation with modern comfort and environmental requirements.

Applications

Pilkington **Spacia™** has a low overall thickness as well as a good acoustic performance and is ideal for use in historic buildings, offering replacement windows more in keeping with the original design. It may even allow the use of the original frames if these are in a reasonable or repairable condition.

Until now, the only choices were to sacrifice thermal performance and comfort, or to compromise the appearance of the building by using bulkier modern frames with double glazing.

Pilkington **Spacia™** is also suitable for other applications where the use of thinner, low-weight glazing would be desirable, for example in sliding box sashes, secondary glazing, or as one pane of a triple glazed "super-window".



How it works

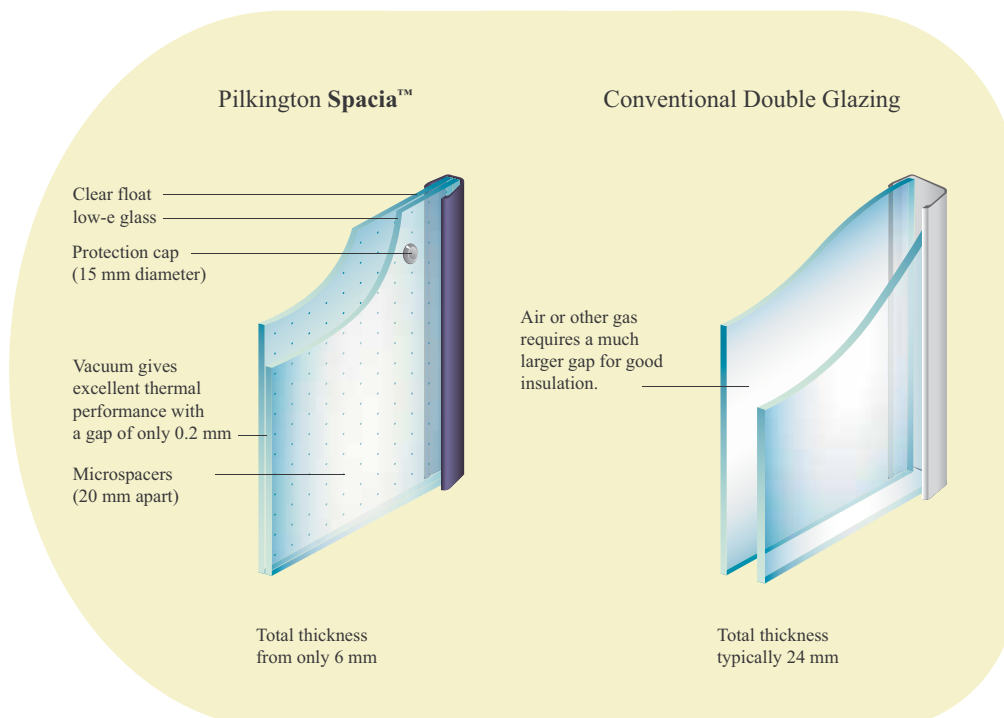
Conventional double glazing consists of two glass panes placed up to 20mm apart, with the cavity between the panes filled with either dry air or an inert gas such as argon or krypton. This gas reduces heat transfer through the glass due to its lower thermal conductivity. The wider the gap between the panes, the lower the heat transfer, up to an optimum level above which circulation patterns in the gas reduce the benefit. This means that the overall thickness of thermally efficient double glazing is typically 24mm.

Double glazing with a krypton-filled cavity as low as 4mm is technically possible, but it is difficult to ensure that such units are sufficiently stable and gas tight to maintain their integrity and keep acceptable levels of thermal performance over the desired life of the glazing.



Pilkington **Spacia™** is different. The air between the two panes of glass is extracted, creating a vacuum. A vacuum, even a small one, is much more effective at minimising conduction and convection heat losses, so the gap between the two panes can be reduced to just 0.2mm, giving an overall thickness of just over 6mm. Heat loss through radiation is limited through one of the glass panes having a low emissivity coating, similar to that used in modern conventional double glazing.

Pilkington **Spacia™** offers the same thermal performance as conventional double glazing in one quarter of the thickness and two thirds of the weight.



Protection cap

The vacuum creation process in Pilkington **Spacia™** results in a hole in one of the panes, located 50mm from the glass edge. This hole is covered by a small permanent plastic cap (8mm radius), which must remain on the glass surface after glazing and should be glazed towards the inside of the building. This can be positioned in any corner of the pane.

Microspacer grid

With an individual radius of only 0.25mm, this grid ensures that the two glass panes are kept a fixed distance apart.

Key Benefits

- Better design: the final window can be more in keeping with the appearance of historic building
- Greater comfort: cold spots close to the window are reduced
- Lower noise: much-improved performance over single glazing, improving the living and working environment
- Lower heating bills: offers four times better thermal insulation than single glazing
- Less disruption and competitive replacement costs: can be retro-fitted into existing frames designed for single glazing
- Proven solution: has been successfully used in Japan for over ten years

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