Thermally Broken Joinery

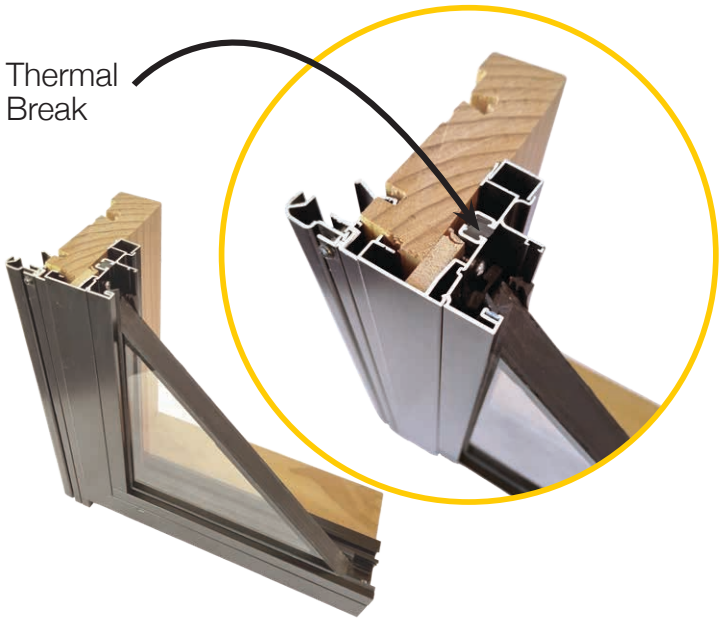
The New Zealand Building Code now mandates thermally broken joinery in new homes, but what does it mean and what are the benefits?

Double glazing has long been used to regulate indoor temperatures by capturing a layer of air (or argon gas) between two glass panes, interrupting heat transfer. This process, known as a “Thermal Break,” involves separating conductive materials (like glass or aluminium) with poor heat conductors.

By employing the thermal break technique in window frames as well as in the glass, overall heat transfer through the window is reduced. A “Thermally Broken Window” refers to a window with a low conductivity material creating a break between the interior and exterior aluminium frame, as well as a thermal break between the panes of glass.

Thermally broken windows offer several benefits.

Windows are a significant source of energy loss, with traditional aluminium frames allowing eight times more energy to escape compared to an equivalent wall area. Higher R values indicate better insulation, and thermally broken frames with high-performance double glazing can achieve an R value of up to 0.8.



In winter, thermally broken frames maintain a warmer interior temperature on cold days and transfer much less heat into the room on hot summer days.

Furthermore, thermally broken frames help reduce condensation by maintaining a similar temperature to the room interior, minimising moisture build-up. However, it’s important to note that adequate heating and ventilation are also crucial to prevent condensation issues.

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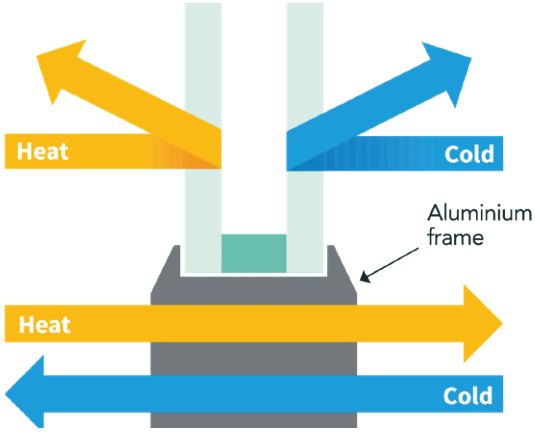
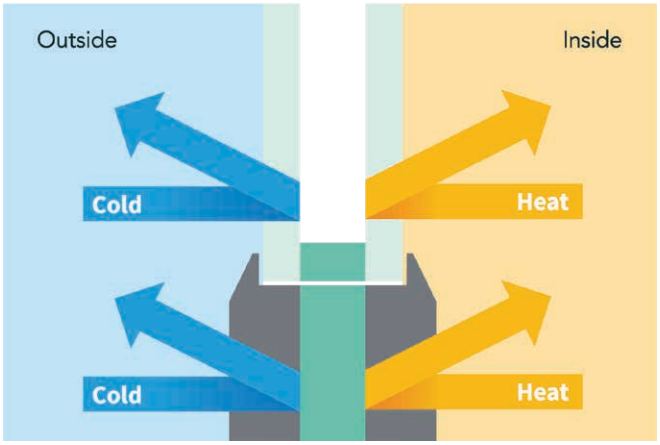
A “Thermally Broken Window” refers to a window with a low conductivity material creating a break between the interior and exterior aluminium frame. This keeps your home warmer and drier, and more efficient to heat and cool.

Standard Aluminium Window
(double glazing / traditional aluminium frame)

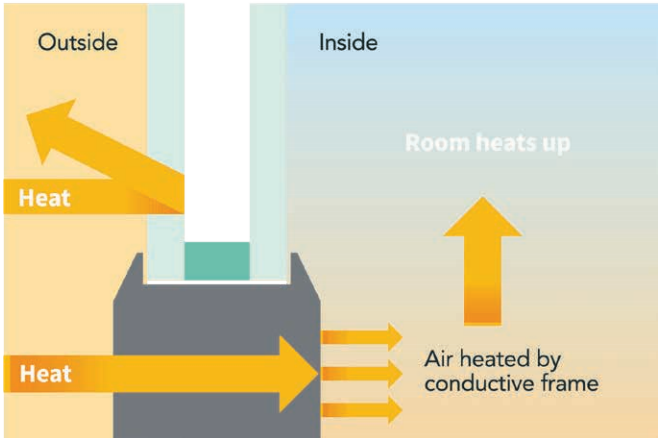


Cold Day with Thermally Broken Windows

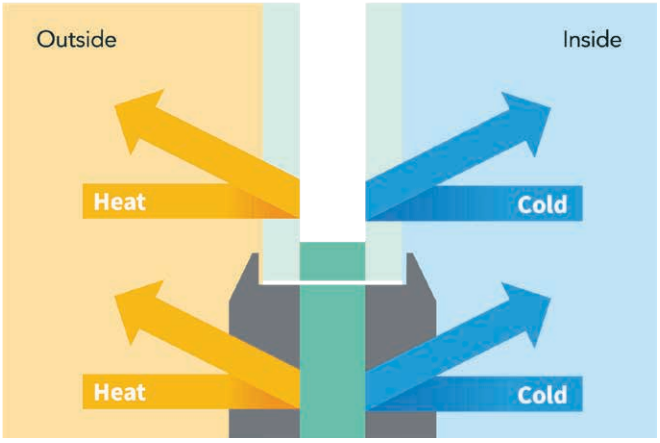


In winter, traditional aluminium window frames match the outside temperature, creating drafts when warm indoor air meets the cold frame. In contrast, thermally broken frames are less affected by the exterior temperature, staying warmer and improving temperature stability.

Hot Day
(double glazing / traditional aluminium frame)



Hot Day
(double glazing / thermally broken windows)



In summer, thermally broken frames also work to minimise heat transfer into the room. Thermally broken frames with high-performance double glazing can achieve an R value of up to 0.8, much higher than standard double glazed frames.

For more information about thermally broken joinery, visit
https://www.wganz.org.nz/thermally_broken_windows/