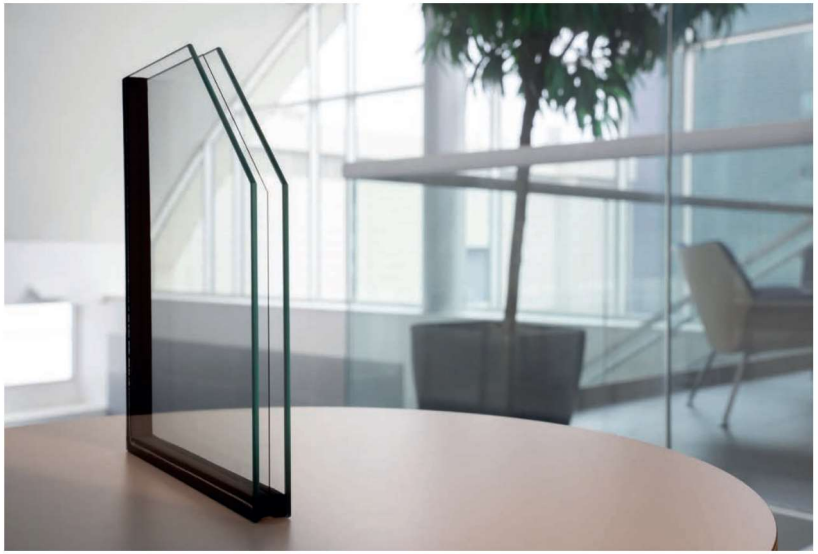
How CORNING's glass innovations are transforming modern architecture

A pioneer in the use of boro-aluminosilicate glass in architectural glazing with its ultra-thin glass innovations, CORNING consistently delivers lighter, more durable and higher-performance IGU solutions - all to help architects and builders meet modern demands in energy efficiency, safety and smart functionality.

New glass innovations are increasingly required in the architecture industry to provide higher performance solutions for architects, designers and builders. Glass compositions, which are almost infinite in number, can be selected by designers to achieve required performance levels in a variety of end-use applications. While soda lime silicate is the most commonly-used glass in architecture, other glass families such as borosilicates and aluminosilicates are now being utilized. Considered a 'new' composition in the architecture space, boro-aluminosilicate glass is well-suited for architectural applications with high resistance to thermal stress, bending stress, scratches and chemical corrosion. The utilization of boro-aluminosilicate ultra-thin glass, with a thickness ranging from 0.5 to 0.7 mm, has facilitated the development of innovative insulated glazing units (IGUs). These new constructions offer enhanced performance, occupant comfort and reliability compared to IGUs constructed solely with soda-lime glass - all while being also lighter. Ultra-thin glass is now being integrated as the central panes in triple and quad IGUs, as well as being laminated to soda-lime glass to improve safety and impact-resistance, reduce sound transmission and enable smart window functionality.

CORNING'S FUSION DRAWS ADVANTAGE

Known for its long-standing expertise in glass, companies like Corning Incorporated are developing boro-aluminosilicate glass compositions to offer customers solutions in the architectural space for advanced triple and quad pane applications. The company's architectural glass offers a variety of benefits for centre pane glass versus soda lime alternatives. To start, it is formed through the company's proprietary fusion draw process. Through this process, the glass surfaces are not touched by a molten tin bath or rollers - enabling a pristine surface and reducing the chances of flaws within the glass - hence increasing its mechanical properties during post processing and final use.



ENHANCED PERFORMANCE WITHOUT HEAT STRENGTHENING

Corning's architectural glass also has an inherently lower Coefficient of Thermal Expansion (CTE) than soda-lime glass, because of its boro-aluminosilicate composition. This means that Corning's glass has lower thermal stress under temperature gradients, so it does not need to be heat strengthened, like soda lime glass. Heat strengthening is recommended with soda lime glass to prevent its inherently higher risk of thermal field failure with its high CTE.

EVOLVING MANUFACTURING CAPABILITIES

While there are a variety of benefits for utilizing a boro-aluminosilicate composition for thin triple applications, there are fundamental equipment and process differences for handling, cutting and manufacturing of architectural glazing and laminates with fusion-drawn boro-aluminosilicate glass versus thicker soda lime silicate glass alternatives. However, over the last few years, comprehensive solutions for the processing of half-jumbo size ultra-thin boro-aluminosilicate glass (below one millimetre in thickness) for architectural glazing manufacturing are now available throughout the industry. Innovations in ultra-thin glass and the enabling process equipment are helping to enable a bright future for glass in the architecture industry.