

# Features and benefits of structural frameless glazing

Structural glazing has become more prevalent in cross-sectional architecture and building in recent years but what exactly is structural glazing? Rebecca Clayton, technical sales executive at IQ Glass, explains more

**T**he first major difference between this type of glazing and traditional styles is the lack of supporting frameworks. Here the glass supports its own weight and form, held together with structural silicone and supporting brackets and by a higher specification and thickness of glass. All fixings and supports are hidden wherever possible.

This clean, frameless finish is the reason that structural glazing is becoming the preferred method of fixed glazing across the residential and commercial glazing industry. Architects and designers recognise the improved visual appearance you can achieve when you remove the framework from glass structures.

Roofs, walls, floors, balustrades and stairs can be designed, manufactured and constructed from visibly frameless glass.

Obviously when using frameless glazing the glass specifications used are of a higher quality. Frequently toughened glass panels are laminated together with PVB interlayers to create stronger, safer glass that can hold its own shape and weight.

Glass beams are made using this technique, layering three to five layers of toughened glass together and laminating the panels using transparent interlayers. This creates a glass beam of massive strength able to support all spans of glass roofs. Vertical elements of glazing can be supported by the glass beam's vertical cousin, the glass fin. These elements can support a vertical glass panel in a glass wall and also take the load of a glass beam from up above.

The dimensions of structural glazings are largely determined by the manufacturing limitations of glass within the UK. The maximum dimensions of a piece of toughened glass in the UK is 6m x 3.2m.

Where larger glass units are used, or where a structural glass element is required to take a heavier load, then higher specification interlayers can be used within the toughened laminate panes in order to improve the strength and durability of the glass construction. These stronger interlayers are generally used where glass will be supporting a load.

These higher specification interlayers are always recommended for structural glass balustrading. Frameless glass balustrading creates a beautifully minimal safety support either internally or on an external area of a build. Frameless structural balustrades are generally constructed from two pieces of toughened safety glass, which are then laminated together using the

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Frameless glass beams to glass roof

Silicone jointed structural glass wall



**'Roofs, walls, floors, balustrades and stairs can be designed, manufactured and constructed from visibly frameless glass'**

clear interlayer; the glass panel is then framelessly fixed below the ground surface at the base of the system. These high specification interlayers greatly increase the strength of the one fixed glass construction; there are numerous video examples of this on the web but when a single sheet of toughened glass is broken it breaks down into small, largely blunt pebbles of glass. When laminated glass is broken the interlayer between the two glass panels adhere the broken pieces together meaning that although the glass balustrade will bend and fail you do not get any falling pieces of glass. But when you use a higher specification of interlayer in these units the interlayer increases the strength of the glass panel so that, although the individual glass panels will break under the load of impact, the interlayer holds the units together and maintains their form, so the safety barrier

of the structural balustrade is maintained.

This laminated construction technique is also used to design and manufacture walk-on glass units.

Seamless structural glazing is used in vertical elevations internally or externally to create a clear glass wall where glass units are silicone jointed together in parallel. When used on external elevations using double or triple glazed units, the act of hiding all supporting elements has an additional positive impact on the thermal efficiency of the construction.

The overall U-value of glass constructions is known as the Uw value. There are various elements of the glass construction that contribute and effect the Uw value, the most important of these are the Ug value, which is the centre pane thermal performance of a glass unit, and the Uf value, which is the thermal performance of the framing and fixings. There is generally a reduction in thermal performance from the Ug value to the overall Uw value due to loss of energy through any framings and fixings.

Due to the inherent aesthetic characteristic of frameless structural glass installation all fixings are hidden and insulated by the building surround, meaning that the thermal efficiency jump between the thermal performance of the glass panel and the overall thermal performance of the installation is reduced. Therefore, the thermal performance of fixed structural glass is improved merely by the drive to create a frameless contemporary glass installation.

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## VEKA gets an A+ (or three) from the BFRC



VEKA has updated its WER calculators to reflect the new BFRC SEL A+ scheme. The BFRC is now accepting applications for the new A+ band, which applies to windows only. Any BFRC A rated product which achieves a rating index of 10 or more can be upgraded to an A+ and VEKA is one of the first major systems companies to be granted the new A+ licenses. VEKA's Matrix 70 and Matrix Fully

Sculptured casement windows and Vertical Sliding systems are now available with a rating of A+ thanks to the Simplified Energy License (SEL) Scheme. The SEL initiative from the BFRC combines the benefits of a simpler, more flexible rating system with stringent control and auditing.

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## Reynaers launches clearest sliding system yet



An infinite view combined with ultimate performance is offered with Hi-Finity – the new, ultra-slim and elegant large sliding door system now available from Reynaers Aluminium. The glazing system is designed to offer an uninterrupted view and seamless integration between interior

and exterior without any compromise on performance. The system provides a high level of strength and durability, supporting large glass panels up to a weight of 500kg. High strength, high thermal insulation and high security combined with a continuous view, make Reynaers' Hi-Finity sliding door system an ideal solution for low-energy contemporary architecture.

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## NEACO's curved glass balconies featured at prestigious development



NEACO's Spectrum balustrade has been specified with curved glass panels to form some stylish corner balcony terraces at Dove Tree Court, a luxury development of 33 assisted living apartments in Shirley, near Solihull, from McCarthy & Stone.

Richard Robinson, buyer at McCarthy & Stone, commented: "NEACO provided a full design and installation solution with close involvement in site meetings throughout the specification process. They were very responsive to our requests and proactive in their approach to delivering our design brief. The installation has been completed to a brilliant standard and I'm sure that we will be working with NEACO again on future projects."

NEACO's National Sales Manager, Richard Richardson-Derry, said: "NEACO's curved glass panels are one of our most visually impressive infill options. Their design and installation alongside some of our straight-panelled balconies at Dove Tree Court is certainly in keeping with the superior quality and prestige of this development and NEACO are delighted to continue our relationship with one of the UK's leading assisted living developers."

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