

TECHNICAL INFORMATION

# OPTICAL DISTORTION IN LAMINATED GLASS FABRICATED WITH HEAT TREATED GLASS

The lamination process consists of bonding PVB or SGP interlayers through heat and pressure in an autoclave, in between panes of glass. This process can produce laminated glass consisting of a minimum of two panes of glass with the desired interlayer type and thickness. This product will yield to a highly customizable, durable, high performing composite material, which will retain glass fragments if broken. These properties make laminated glass suitable for safety glazing, security glazing, sound control, solar/light control, and impact glazing (hurricane, tornado, bullet-proof, blast proof).

The following points should be taking into consideration with laminated glass:

Annealed glass has half of the strength of a heat-strengthened glass of the same thickness. Using heat-strengthened decreases the possibilities of breakage caused by impact, thermal and bending stresses and it also provides glazers with possibilities of using larger glass panes that withstand greater load resistances. Due to the manufacturing process of heat-strengthened glass, physical attributes such as bow, warp, roll ripple or kink can be present creating an optical distortion.

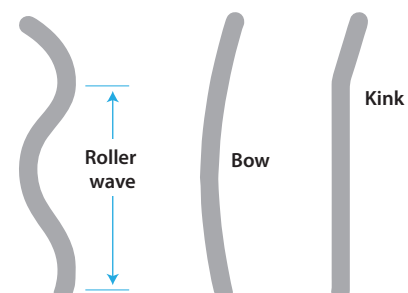
When utilizing heat-strengthened glass as the substrate for lamination, some degree of distortion will be present. This distortion will be increased due to the lens effect of having the substrates out of phase or non-parallel surfaces.

Reflected images and objects viewed through can be perceived as magnified. When incorporated into an insulated glass unit, the effect will be visible, but rarely questioned as it is considered normal.

When viewing images in different angles (normal is 90 to the surface) through reflectance or transmission, distortion may be accentuated. Distortion will be more significant the more acute or obtuse the angle is. This distortion is expected with laminated glass and considered normal.

Even though heat-strengthened laminated glass will be often specified or required to meet extreme conditions, such as high wind loads and thermal stress. Tecnoglass will recommend and notify the customer of the preference of using annealed glass for lamination instead of heat-strengthened glass because of the observations mentioned above. If required, samples or mock-ups could be produced to view and approve distortion concerns.

Heat-strengthened glass distortion nomenclature



Heat-strengthened laminated glass composite showing lens effect

