

## The exposed edges of your fully tempered laminated glass may not be perfect in appearance close-up, but will be within industry standards.

First, let's discuss what is 'fully tempered laminated glass.' Laminated glass is 2 pieces of glass that are sandwiched together with a thin plastic film (usually PVB) in-between. This is the type of glass used in car windshields. When broken, normally only one layer of the glass is broken and it can crack and spread, while remaining in place, because it is "glued" to another layer of glass via the PVB interlayer.

Tempered glass is baked at high-heat for a period of time, which realigns the molecules of glass, which makes it much stronger and impact resistant. This is the glass type used in the side windows of a car. But, when broken, it does not simply crack, instead it shatters into tiny bits and does not remain in place.

As the name suggests, 'fully tempered laminated glass' (FTL) is laminated glass made up 2 layers of glass that has been tempered first. This combines the high strength and impact resistance of tempered glass with the shape retention of laminated glass.

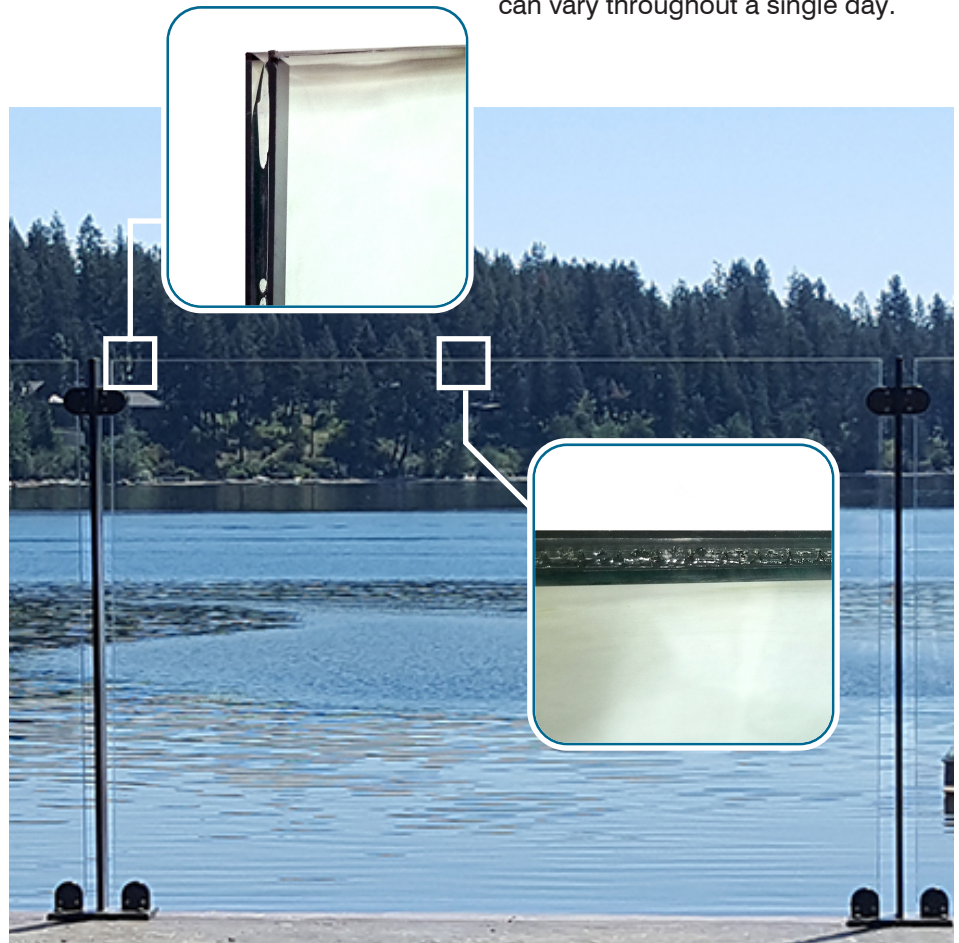
However, tempered glass edges must be polished **before** entering the tempering oven, thus **when tempered glass is used in laminated glass, the edges can not be ground or polished to clean-up the edges like typical laminated glass can be.** Thus the 2 layers of glass may not be lined up exactly AND the PVB interlayer may be a little rough, due to limitations on polishing edges. Polishing or sanding edges of tempered glass after it is heat treated, can weaken the glass significantly, thus it is not done.

### Why use FTL glass in the railing system?

Simple, the building codes require it for safety. Per IBC Commercial Code & WA State Residential Code, laminated glass is required for guard railing systems that do NOT have a top rail, (IBC 2407.1.2, WAC R308.4.4.1). FTL is required to also meet the loading criteria set forth by the codes, with a 4x safety factor. Some commercial instances require FTL, even when a top rail is also used, becoming the new norm.

### Industry Standards

All our glass manufacturing vendors adhere to the appropriate ASTM standard specifications (C1048, C1172, C1036). However, since Infinity Railing relies greatly on the aesthetics of tempered (or FTL) glass, its important to be aware that some allowable manufacturing tolerances are permitted. It is also worth noting that any railing system installed on to a wood deck (or similiar construction) will be effected by the expansion and contraction of the deck itself; which can vary throughout a single day.



Close up images of FTL glass edges. Tempered layers do not line up exactly, and the PVB is a little rough in places, but are within industry standards. Typically not noticeable when looking through the glass panels, but only close-up inspection.