

Choosing the correct glass for your balustrade is paramount. In any scenario safety glass will always be required.

Normally toughened glass is the standard option, this being up to 10 times stronger than the same thickness of clear annealed glass.

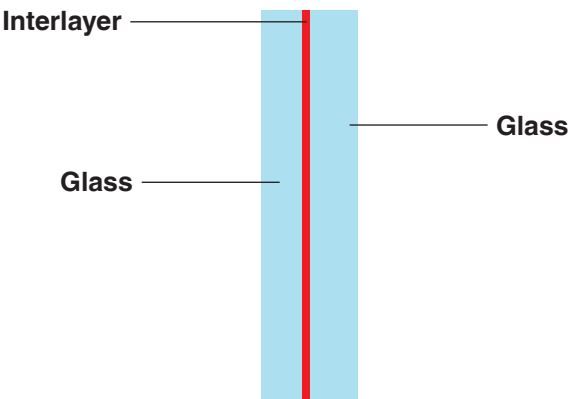
A second option is toughened laminate glass, this is when two panes of toughened glass are bonded together to form a single pane. This offers the benefit that should one pane break then the other remains to guard any potential fall, it also reduces the potential of injury from falling glass.

Glass is toughened (Tempered) by putting a cut to size piece of annealed glass through a kiln that heats the glass to molten point then rapidly cools the glass. This causes compression on the outer surface thus increasing its strength. Another benefit to toughened glass is that if it does break it shatters into very small pieces rather than large sharp shards.

One issue with toughened glass is the small risk of a nickel sulphide (NiS) crystal forming within the glass, this can on rare occasions create a spontaneously breakage, and can happen at any time after installation. The risk of this happening is greatly reduced if you ask for heat soaked glass, an added process where the toughened glass is re-heated to a reduced temperature but then cooled slowly.

What is laminated glass?

Laminate glass consists of two sheets of glass bonded together with a special interlayer between them.



For balustrade we normally bond two panes of toughened glass together.
There are many main types of interlayer available, each has it's own characteristics;
The most common interlayers include:

PVB	Poly Vinyl Butyral	Least resistant to water
EVA	Ethyl Vinyl Acetate	
SGP	Sentry Glass	
CIP	Cast in place	

Please be aware that laminate interlayers can, if not installed correctly, be affected by immersion in water and can eventually cause de-lamination of the two sheets. Glass should never become submerged in water at any point so the correct drainage will be required to be drilled into the base channel.

The table below shows details the Uniform Distributed Load (UDL) and required glass make up for toughened and laminate glass for use on free standing glass protective barriers (based on 1100mm top rail from finished floor level).

Design level horizontal UDL (line load) (KN/M)	Sentry Glass mm	EVA laminate thickness mm	Toughened glass thickness mm
0.36	13.5	17.5	12
0.74	17.5	21.5	15
1.50	21.5	25.5	19
3.00	25.5	31.5	25

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