EXPOSED LAMINATE BALUSTRADE INSTALLATION RECOMMENDATIONS

AGGA
AUSTRALIAN GLASS & GLAZING ASSOCIATION

Exposed laminate balustrade installation recommendations

Balustrades in a laminated form are increasingly been glazed into applications using traditional methods that historically have been in place for monolithic type products.

These recommendations are to increase the awareness and importance of considering the interlayer when glazing it into these applications.

Whilst interlayers are largely either standard PVB or a structural interlayer material, both have characteristics and reactions against sealants and glazing materials that need to be considered.

There is common Industry comment in relation to exposed laminated edges and their relative resistance to edge-creep or delamination against both external elements and sealant materials.

Made to size laminates are generally seen to have superior edge adhesion over laminate panels which are cut down from stock sheets. Whilst cutting methods for annealed laminates differ, most techniques involve heating and stretching of interlayers, which can compromise the adhesion of the interlayer along the line of the cut and leave it more susceptible to delamination effects of chemicals and weathering.

In addition, improvements to the formulation of standard PVB interlayers over time, appears to have reduced the incidence of delamination in exposed situations, compared to earlier formulations of the interlayers prior to 1997.

Structural interlayers made from ionomers or structural PVB tend to have better edge stability and sealant compatibility.

Some of these Products have been documented to be under prolonged exposed conditions in Florida, USA and panels show excellent edge stability after years of continuous exposure to outside conditions. They are regularly examined for any evidence of interlayer shrinkage or delamination. In addition, the product has also been subject to other rigorous accelerated weather testing.

It must still be noted that whilst the structural interlayers are much more weather resistant, they are not waterproof. The ability of the interlayer to maintain adhesion of the glass shards between the time of breakage and the replacement of the glass needs to be part of the design consideration. PVB laminated glass is well known to contain the glass shards for extended durations after breakage with minimal glass fragments loosening from the interlayer.

If any laminate product is glazed in such a way that water is allowed to pool around the interlayer for extended periods, the moisture will eventually leach into the interlayer which will then lose adhesion and could delaminate. This is typically seen initially as edge blush, a gradual white misty ingress from the source of moisture which seeps into the panel.

Typical moisture ingress of interlayer

Where the laminated product is channel glazed, the channel must be completely filled with an approved, compatible and non-moisture absorbing grout. Grout to glass surfaces must be sealed to ensure water is not able to enter the glazing pocket.

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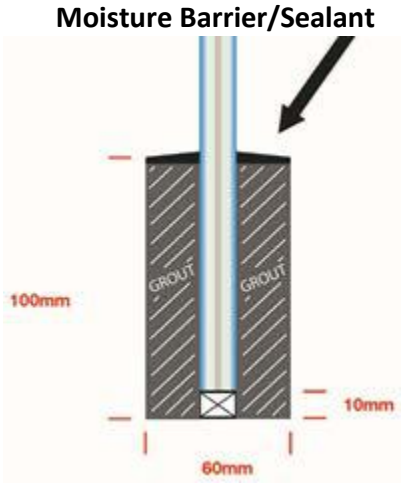

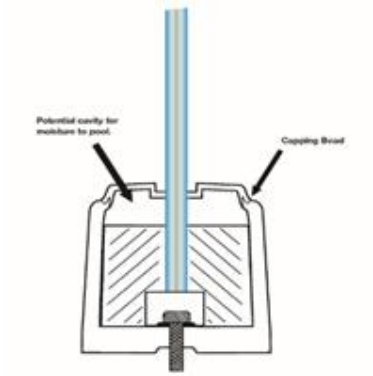

Note : Balustrade channel designs with a top cap or bead may create a potential internal cavity for water to pool. Also, where dry glazed systems are used, consideration must still be given to ensure that any water which enters the channel is able to drain away.

Whichever systems are used, if laminates are allowed to sit for extended periods in water or against moisture, the potential of delamination is high and warranties may be void.

Use of cement based non shrink grouts

The use of cement based grouts for external glazing of glass has been common practice and popular in Australia for fixing of glass products, however there are several risks associated with cement based grouts which must be highlighted when installing any laminate product.

Interlayer manufacturers typically advise against the use of cement based grouts in intimate contact with laminated glass edges.

The following areas of concern have been identified:

- Cement based products are caustic and may react when in contact with incompatible materials (such as aluminum for example). There is little known long term testing available on cement based grouts and Ionomer laminates.
- The importance of mixing correct grout quantities is crucial and the grade of grout also is a factor as some grouts shrink more than others. Once grouts shrink, their adhesion to the glass can be lost allowing hairline cracks along the glass/grout intersections for water to potentially penetrate.
- Any movement of the panel, whilst grouts are curing can again cause internal cavities and cracks for moisture to enter.
- Cement based grouts have a level of porosity and should be sealed against external moisture.
- Thermal breakage due to cool edge or differences in the thermal coefficient of expansion between the grout and the glass.

There are epoxy based products which will not allow moisture to be absorbed and these should be considered for use in these applications. Consult the sealant manufacturers regarding availability.

This guidance does not preclude the use of other methods, materials or equipment, however the user should undertake careful evaluation and make suitable enquiries on the suitability of alternative methods, materials or equipment, before using them.

This information is offered as a general guide only and is no replacement for site and project specific analysis. Always seek information on compatibility and suitability from manufacturers of the materials to be utilized.

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