



CENSOLUTIONS

Glass fracturing in Decorative and Specialist Sealed Units

Fracturing generally occurs in decorative sealed units because the glass has not been able to withstand the amount of stress imparted by deflection that often occurs due to weather related cyclic movement (Temperature and Barometric Pressure). This deflection may be affected by a number of factors that are covered in the CENSolutions Bulletin on Deflection.

This type of fracture nearly always occurs on the exterior pane of glass bearing the decorative additions. This is to be expected as these additions impair the flexing of the glass and as a result the glass cracks.

Poor glass cutting may encourage this fracturing with any shells on the edge being areas of weakness. Alternatively the cutting of colour film and lead on the glass has been seen, if the cutting action is too hard, to damage the surface and encourage fracture.

The fracturing appears generally to occur when there is a rapid lowering in temperature and/or barometric pressure. However, if fracturing occurs very soon after manufacture there is a suggestion that the glass has been damaged at some stage during production. The rapid contraction of the internal airspace (caused by cooling and perhaps re-adsorption of nitrogen by the desiccant) has either exploited this weakness or been sufficient to over-stress the glass on its own.

The use of back to back spacer bar to provide units with internal bars for Georgian Framed Windows has also on occasions caused fracturing. This is usually associated with the use of spacer the same size as that used around the perimeter and this internal bar acts as a fulcrum for the glass to be bent over during the cyclic movements. The effect of differing temperatures bridging through the spacer is thought to have some contribution towards this type of failure. Fracturing is also encouraged if the external face of the glass is damaged (or its movement is restricted) when the framing material is fixed. The use of an internal bar approximately 2mm smaller than that used around the perimeter allows movement and often prevents fracture. Please see CENSolutions Bulletin on this subject.

To minimize the risk of this problem we would recommend the following:

- Please refer to Sealant manufacturer for general advice on equalization etc.
- Ensure that depth of seal conform to manufacturers recommendations.
- Quality of seal: Please refer to the various sections in the Technical Bulletin on The Causes of Glass Deflection in Hermetically Sealed I.G. Units.
- Use only low deflection desiccants intended for hot melt butyl.
- Avoid damaging the glass edges or surface.
- The use of toughened glass on the decorative side will also ameliorate the situation should the problem persist.

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