CENSOLUTIONS

Spacer Deflection into IG Units

For some time investigations the possible causes of the phenomenon exhibited by some double glazed units where the spacer has ingressed into the unit on the longer sides has been examined. This has the effect of taking the hot melt sealant with it. The spacer bends, permanently deforms and is prevented from returning to its original position. The ingress was such that it can projects beyond the sightline. It should be stressed that these units have not failed in conventional terms but the visual appearance was obviously unacceptable.

There appears to be a distinct type of unit that is prone to occasionally exhibiting this effect, namely units with a high aspect ratio and typically opening light units. It is important to understand the forces and processes occurring within an installed unit. When units are installed, they undergo differing degrees of expansion and contraction depending on levels of exposure and the direction of exposure. With high aspect ratio units, the narrowness of height will prevent the glass from deflecting fully when the unit is exposed to heat from direct sunlight. Also the desiccant may possibly desorb nitrogen that would change the original negative pressure into a positive pressure. At the same time, in prolonged sunlight, the spacer and sealant will also warm, progressively softening the sealant the higher the temperature reached. Temperatures commonly in excess of 60^0 and as high as 90^0 Centigrade have been measured inside units subjected to prolonged sunshine. When the glass and airspace subsequently cool down, the sealant will remain soft and pliable for a slightly longer time. The “negative pressure” will then return because of the contraction of the air and possible re-adsorption of the nitrogen. The spacer bar, with the still softened sealant could then be pulled inwards. When the sealant cools, the spacer is “trapped” in its new position. This effect is thought to be caused by cyclic heating and movements that occur over a long period.

The accompanying Technical Bulletin on “The causes of Glass Deflection in Hermetically Sealed I.G. Units” discusses some of the causes of the internal “negative pressures” that appear to have “pulled” the spacer into the cavity. It is also logical to assume that the trend of spacer manufacturers to progressively reduce the gauge of the aluminium used will reduce the resistance to this phenomenon.

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

1. Please refer to the general advice on equalisation enclosed.
2. Ensure that depth of seal conform to manufacturers recommendations.
3. Quality of seal: Please refer to section viii in the enclosed Technical Bulletin etc.
4. Use only high quality low deflection desiccants intended for hot melt butyl.
5. Tight packing of desiccant into the long sides of the unit will increase the rigidity of the bar and its resistance to deflection.

I trust that our comments and suggestions are of assistance. If you have any further questions I feel assured that you will feel free to contact us.

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