

Compatibility with Insulating Glass Sealants

Migratory solvents, oils, and plasticizers found in some wood preservatives, glazing sealants, setting blocks, glazing boots, and wood stains /varnish can migrate through, and into, the seals of an insulating glass unit. This movement of materials can lead to the degradation of the polyisobutylene (PIB), and silicone used to seal the IG unit. In turn, this can cause premature failure of the IG unit in the form of argon loss or moisture infiltration.

Exposure of the insulating glass seal to incompatible materials can result in the following long-term effects:

- Adhesion loss of the primary or secondary sealant to the glass or spacer
- Increased moisture permeation with eventual moisture between the panes (seal failure)
- Decreased argon gas concentration in the airspace
- Degradation of the PIB, resulting in formation of a clear viscous liquid running down the airspace surface of the glass (See figure IG15-01)
- Chemical fogging of the airspace from vapors of the migratory materials (See figure IG15-02)

Organic Plasticizers

Organic plasticizers can attack the PIB primary seal of the IG unit. Symptoms of this attack include slumping of the PIB material into the airspace, spacer read-through, and in severe cases separation of the PIB resulting in clear thick liquid inside the IG unit (see Figure IG15-01).

Most organic plasticizers are not volatile and require direct contact between the material containing the plasticizer and the IG edge seal for migration to occur.

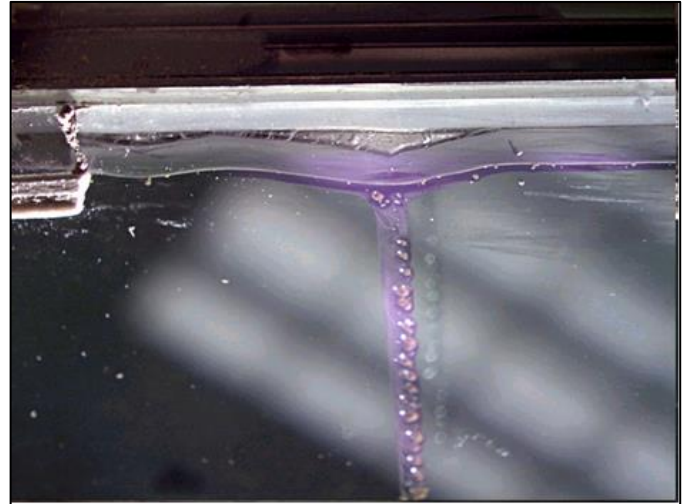


Figure IG15-01, Close up of liquid inside due to incompatible chemical attack of the PIB primary seal.

Inorganic Plasticizers

Inorganic plasticizers are found in some silicone-based materials, like silicone glazing sealants and setting blocks. These materials can migrate from the silicone glazing material into the IG unit seal system. This migration can compromise the IG unit seal, potentially lead to adhesion loss of the IG sealant(s), significant Argon loss, and eventual unit failure. Significant Argon loss could also lead to unit collapse. Most inorganic plasticizers are not volatile and require direct contact between the material containing the plasticizer and the IG edge seal for migration to occur.

Wood Preservatives

The Window and Door Manufacturers Association (WDMA) requires the treatment of its wood components with a wood preservative as specified by the WDMA standard IS.4 *Water Repellent Preservative Non-Pressure Treatment for Millwork*. The most common wood preservative solutions consist of anti-fungal/mold components, as well as petroleum-based solvents. The solvents have two functions: one function enables the anti-fungal components to be put into solution, and the second function is to act as a vehicle for transporting the anti-fungal components into the wood.

Most window lineal parts are treated by dipping the wood for a brief time into a tank containing the wood preservative solution. The window lineal parts are then moved to an area for drying where typically most of the solvents will evaporate. However, if the drying process is curtailed prematurely, or if the lineal parts are permitted to remain in the treatment tank for an extended period, solvent can remain in the lineal parts. In the tightly sealed reglet of a wood sash, the remaining solvent can volatilize and subsequently attack the insulating glass sealants.

To reduce the chances of chemical attack by wood preservatives, Cardinal recommends window manufacturers ensure complete drying of their window lineal parts prior to glazing.

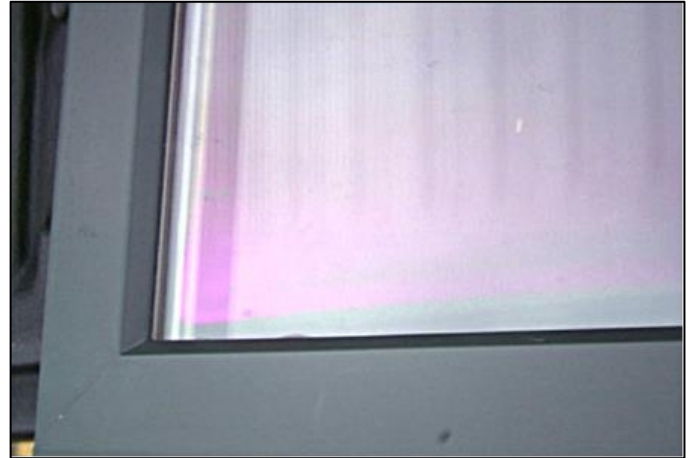


Figure IG15-02 Photograph of chemical fogging on the LoE™ surface of the IG unit. Solvent vapors result in a purple color when viewed in reflection

Evaluation of Glazing Materials

Many sealants, setting blocks, glazing boots, and other glazing materials contain these migratory materials that may have a negative effect on IG performance. The window manufacture is ultimately responsible for ensuring compatibility between glazing components and the IG unit.

Cardinal IG supports its customers by offering as a service a limited evaluation of these materials. These evaluations are done on a case by case basis and should not be applied across product lines, designs, or material types. Contact your Cardinal IG sales representative for assistance in the evaluation of glazing materials.

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