

# Sealant Compatibility with Sputtered LoE™ and LoE<sup>2</sup>® Coatings

Sputtered LoE™ (and LoE<sup>2</sup>®) coated glass products are produced with either one or two silver layers in the LoE coating stack. Certain sealants, as well as other components used in the fabrication of insulating glass units, have the potential to liberate semi-volatile compounds that can attack the silver layer(s) in sputtered LoE coatings. This chemical attack can cause “corrosion” or spotting of the silver layers, even though the silver layers are protected with chemical and abrasion resistant protective coatings. Normal handling and washing does not disturb these protective coating layers and they remain intact to protect the silver layer(s) from many but not all semi-volatile compounds that may enter the airspace. However, non-inspectable scratches and pinholes caused by normal handling, shipping and washing damage, can reduce the effectiveness of the protective coatings, resulting in LoE coating corrosion potential if the coating is exposed to non-compatible volatiles.

Cardinal has successfully produced over 1 billion sq. ft. of LoE IG products with a butyl primary seal, bent or soldered corners and a silicone secondary seal without showing any evidence of LoE corrosion due to sealant incompatibility. Cardinal believes there is little likelihood that a well constructed dual-seal system with PIB as the primary seal, bent spacers, and/or butyl injected spacer key seals, will create any anomalies to LoE coatings as the butyl will usually retard incompatible secondary sealant vapors from entering the airspace. However, if argon fill holes are in the spacer, unsealed corner keys are used without butyl coverage, or voids are present in the primary seal, there is the potential for having secondary sealant volatiles enter the airspace. Single seal systems, which liberate sulfur or

chlorine, have been shown to create LoE spotting or corrosion failures caused by volatiles liberated by these seal systems. Since Cardinal has no control over the materials used in the manufacture of IG units with Cardinal’s monolithic LoE coated glass, Cardinal’s Monolithic LoE™ Glass Warranty is null and void if there is LoE corrosion caused by an incompatibility between any sealants and/or other materials used in the fabrication of IG units with Cardinal’s LoE coated glasses. See Cardinal CG Company’s Monolithic LoE™ Glass Warranty for more information.

In addition to sealant compatibility issues, the following conditions are known to increase the LoE corrosion potential if the coatings are exposed to incompatible volatile compounds:

- Damage to the protective coating due to improper shipping and handling.
- Storage in improper conditions (warm, humid environments).
- Damage to the protective coatings due to improper washing conditions (washer brush abrasion, and improper washing conditions which leave chlorinated contaminants on the glass from wash water or soaps).
- Frost point of IG unit airspace above 0°F (seal failure).

Cardinal will assist our coated glass customers with information concerning material compatibility, handling, washing, storage and IG unit construction. It is also recommended that the sealant supplier and other IG component suppliers be contacted for their recommendations on material compatibility and use of their products.

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