

IG Unit Frost Point, Internal Condensation, and LoE™ Corrosion Potential

Frost point is the temperature at which water molecules form on the inner surface of an insulating glass (IG) unit. During IG unit assembly, ambient moisture will be trapped inside the IG unit. The frost point suppression time (the time needed to achieve a suitably low frost point after fabrication) will vary depending on a number of factors including the unit size, airspace width, desiccant capacity, materials in the airspace, spacer type, and argon vs. air filling.

Cardinal CG Company's Limited Warranty for Monolithic LoE Glass states that the warranty will not apply unless "The frost point of the sealed insulating glass unit in which such Monolithic LoE Glass is used is and remains 0° F or lower".

Metal spacer systems using beaded molecular sieve desiccant can be tested to determine their desiccating capacity by using the industry accepted Temperature Rise Test. This test may be used as a QC test for incoming desiccant, stored desiccant, and/or prior to fabricating the IG unit.

The Temperature Rise Test cannot be used with the powdered desiccants contained inside matrix materials, butyl spacers, or silicone foam spacers. In addition, the frost point suppression with these products can take much longer than with a typical metal spacer with desiccant beads. For large IG units with wide airspaces and a large amount of initial moisture in the airspace, the time frame for frost point suppression can be additionally extended. If the IG unit is installed, conditions may promote corrosion of the LoE coating.

It is strongly recommended that IG manufacturers using matrix materials, butyl spacers, or silicone foam spacers make certain that these incoming

materials have active desiccant and are stored and handled properly in order to assure low initial IG frost points.

It is also recommended that IG manufacturers work with the desiccating/spacer material suppliers to assure the production of IG units have airspace frost points of 0° F and below. If the frost point of the IG units, with Cardinal's LoE coated glasses, are not 0° F or below, Cardinal CG's Coated Glass Warranty is null and void.

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