

Pyrolytic Low-E Coated Glasses (*SUNGATE*[®] 500 and 600): Commercial Design Considerations

Pyrolytic Low-E coated glasses offer energy conserving opportunities and aesthetic design variety to architects, building owners and glass fabricators.

Pyrolytic Low-E coated glasses incorporate pyrolytically fused low emissivity coatings that, when combined with a companion tinted glass lite in insulating glass units, can provide a vast range of design aesthetics and performance characteristics. Also, due to their durability, *Pyrolytic Low-E* coated glasses can be inventoried by Vitro Architectural Glass (formerly PPG Industries) fabricator customers who can then cut and further fabricate the products to meet the requirements of often demanding construction time schedules.

Because *Pyrolytic Low-E* coated glasses have low visible light reflectance and minimal inherent color, the aesthetic appearance of the finished insulating glass unit remains true to the specified tinted glass substrate.

The reduced emissivity of the *Pyrolytic Low-E* coatings, lower the U-values of standard 1” insulating glass units by up to 30% when compared to uncoated units. In addition, the coatings also provide some solar control enhancement.

Pyrolytic Low-E Coating Facing Airspace (No. 3 Position) of IGU

In order to help its fabricator customers, architects, and building owners make informed decisions concerning the use of *Pyrolytic Low-E* coated glasses, Vitro offers the following guidelines.

- Vitro recommends that, for commercial applications, *Pyrolytic Low-E* coated glasses be combined with lower lite

transmitting tinted glasses, such as *ATLANTICA*, *SOLARBLUE*, *SOLARBRONZE*, *SOLARGRAY*, etc., as the companion lite. While these coatings have minimal inherent color, the normal production color variation may be perceivable when used with higher light transmitting glasses, such as clear and *SOLEXIA*, especially when glazed in curtain wall or ribbon wall applications.

Heat strengthening or tempering *Pyrolytic Low-E* coated glasses may further increase the perceivable color difference.

- When used in commercial punched opening applications, or in residential windows, the normal color variations in *Pyrolytic Low-E* coated glass may not be an issue due to the separation distance between units.

NOTE:

Vitro STRONGLY RECOMMENDS A FULL-SIZE MOCKUP BE VIEWED PRIOR TO MAKING A FINAL DESIGN DECISION.

Pyrolytic Low-E Coating Facing Building Interior (Room-Side Exposed)

Glass Cleaning Recommendations

In commercial glazing applications, specifically where large areas of glass are involved, Vitro recommends that consideration be given to the specific cleaning instructions for *Pyrolytic Low-E* coated glasses in monolithic applications, or in insulating or laminated glass units where the coating will be exposed to the building’s interior environment.

These coatings are extremely durable and resistant to mechanical and chemical damage. Due to the crystalline nature of the

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coating, when cleaning *Pyrolytic Low-E* coated glass surfaces, follow these recommendations:

- Always use a mild soap or glass-cleaning solution. Do not use abrasive cleansers.
- Adequately wet the glass surface; it will allow for more thorough cleaning and help prevent streaking when drying.
- Use a clean, soft, lint-free cloth. (A microfiber cloth can be a good choice.)
- If a squeegee is used, it should not have metal components that can contact the coated glass surface and potentially scratch it or leave a residual deposit.

Energy Efficient Interior-Exposed Coating

In a double-pane IGU, the *Winter Indoor Glass Temperature* is about 15 - 18% lower with an interior exposed Low-E coating on the No. 4 surface when compared to clear glass. This occurs because the low emissivity coating reflects interior radiation back into the room. This lower *Winter Indoor Glass Temperature* increases the probability of room-side glass surface condensation. Whether or not condensation actually occurs depends on the outside ambient temperature, inside room temperature and relative humidity.

Pyrolytic Low-E Coatings: General Guidelines

Scratch Resistance

As stated previously, pyrolytic coatings are extremely durable and resistant to mechanical abrasion. However, the coatings are not more resistant to scratches than the glass surface itself. Therefore, what

scratches the glass will also scratch the coating. Razor blades and other sharp objects should not be placed in contact with the coated glass surface.

Heat Treatment Recommendations

Pyrolytic Low-E coated glass can be used annealed, heat strengthened, fully tempered or laminated. Fully tempered or laminated configurations may be required for safety glazing applications.

- a. Turn off the SO₂ in the furnace to avoid damaging the coating.
- b. Do not rely on radiant temperature sensing instruments to provide an accurate indication of the temperature of the coated glass surface. The coatings have a drastically different emissivity than that of uncoated glass. Measure temperature from the uncoated glass surface.
- c. Heating the coating above its deposition temperature (1150°F to 1250°F) should be avoided. If the deposition temperature is exceeded, the glass will expand more than the coating, thus causing cracking of the coating.
- d. To avoid coating damage the minimum bending radius of *Pyrolytic Low-E* coated glass is 36 inches. The direction of the bend must always be concave so the coated glass surface is in compression.

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Warranty

Pyrolytic Low-E coated glass is sold subject to Vitro's written limited 10-year warranty that is extended to Vitro direct customers. Copies are available upon request.

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HISTORY TABLE		
ITEM	DATE	DESCRIPTION
Original Publication	11/28/2001	TD-108
Revision 1	1/14/2003	Clarification of Vitro recommendations and minor editorial changes.
Revision 2	8/17/2010	Corrected product names, added commercial specific references and editorial changes.
Revision 3	6/26/2012	Included Sungate 600 coated glass.
Revision 4	2016-10-04	Updated to Vitro Logo and format

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