

Interior Exposed Pyrolytic Low-E Coated Glasses Improved Energy Efficiency for Residential Applications

SUNGATE® 500 and SUNGATE® 600 coated glasses are Low-E glasses manufactured using a pyrolytic chemical deposition process, a standard technology from Vitro (formerly PPG Industries) which has been successfully used within the glass and glazing industry for more than 20 years. For improved thermal performance in residential applications, pyrolytic Low-E coated glass can be used in the room-side exposed position in an insulated glass unit (IGU) configuration. In these exposed interior positions, use the cleaning recommendations in this document for optimum visual results.

Pyrolytic Low-E coated glass incorporates a fused low emissivity hard coating that, when combined with a companion glass lite in an IGU, can provide improved energy efficiency. Also, due to its inherent durability, pyrolytic Low-E coated glass can be inventoried by Vitro fabricator customers who can then cut and further fabricate the product to meet the requirements of often demanding construction time schedules.

Because pyrolytic Low-E coated glasses have a low visible light reflectance and minimal inherent color, the aesthetic appearance of the finished IGU remains true to the specified glass substrate. As with any combination of glass and coated glass IGU construction, Vitro recommends a visual mock-up to determine overall acceptability of the final configuration, including muntins, etc.

Recent legislation by the federal government and code/program revisions by key organizations emphasize improved energy efficiency for glazing applications. These energy codes will most likely become more stringent in the future. Therefore, it is recommended window glass fabricators

evaluate more energy efficient sash and frame technologies, as well as multiple air spaces, and energy efficient glass coatings. Pyrolytic Low-E coated glass, used in combination with other key components of an IGU and window system, can help achieve these new requirements.

In a 3/4-inch double-pane IGU with the coating on the No. 4 surface, *SUNGATE 500* lowers the U-value by approximately 20% and *SUNGATE 600* by 30% when compared to an identical IGU without the coating on the No. 4 surface. In addition, these coatings also provide some solar control enhancement.

In order to help its fabricator and window/door customers make informed decisions concerning the use of pyrolytic Low-E coated glass and ensure a more positive experience for the homeowner, Vitro offers the following guidelines.

Glass Cleaning Recommendations

Pyrolytic Low-E coated glass, when used with the coating in an interior-exposed application (No. 4 surface for double-pane IGU), is extremely durable and resistant to mechanical and chemical damage. Due to the crystalline nature of the coating, when cleaning the coated glass surface, homeowners should 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.)

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- 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.

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.

Energy Efficient Interior-Exposed Coating

In a double-pane IGU, the *Winter Indoor Glass Temperature* is about 12 - 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.

Heat Treatment Guidelines

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 *SUNGATE 500 and SUNGATE 600* coated glass is 36 inches. The direction of the bend must always be concave so the coated glass surface is in compression.

Warranty

SUNGATE 500 and SUNGATE 600 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	8/12/2010	TD-150
Revision 1	12/1/2011	Updated to include Sungate 600 and expanded Guidelines.
Revision 2	2016-10-04	Updated to Vitro Logo and format

This document is intended to inform and assist the reader in the application, use, and maintenance of Vitro Flat Glass products. Actual performance and results can vary depending on the circumstances. **Vitro makes no warranty or guarantee as to the results to be obtained from the use of all or any portion of the information provided herein, and hereby disclaims any liability for personal injury, property damage, product insufficiency, or any other damages of any kind or nature arising from the reader's use of the information contained herein.**