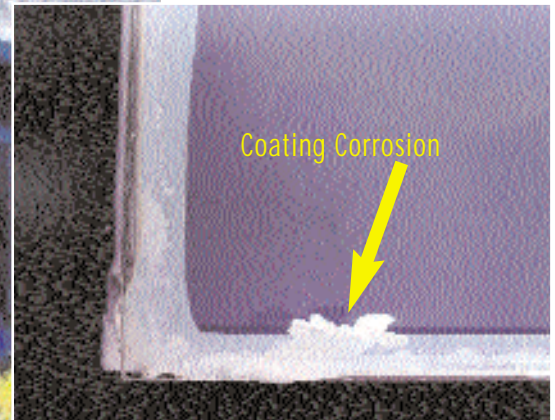


Hands Clean

Tips and Recommendations for Handling Coated Glass

by Jeffery E. Haberer

Photo Courtesy of Four Seasons Sunrooms.



Top left: Coated glass is more common than non-coated glass in most of today's windows. Above: An example of a test result of un-deleted, sputtered low-E coating.

Coated glass can enhance the aesthetics and performance of buildings and windows. In fact, it is now more common to find coated glass than non-coated glass in most of today's windows. With this increasing volume of coated glass, it is important for material handlers and insulating glass assemblers to understand that assembly of coated glass products are different. These products require a degree of special handling that goes beyond the assembly of uncoated glass.

From storage to cutting, washing and assembly there are specific techniques for handling coated glass. These are not necessarily difficult techniques, but they do require the handler's attention.

Coating Types

Not all coatings are created equal. There are two basic types of coated glass on the market today, and each one's name relates to the way in which the coating is applied. These types are pyrolytic coatings and sputtered coatings.

The pyrolytic coatings are applied while the glass is being formed during the float glass process. "Pyro" is from the Greek word for fire and means that the coating is fired into the glass surface. Pyrolytic coatings are either sprayed or dispensed as a vapor onto hot glass.

Sputtered coatings are applied on cold glass inside a vacuum chamber. The term "sputtered" refers to the process whereby molecules of a target metal are dislodged and deposited on the glass.

Both types of coatings have their advantages and disadvantages, and both have their place in the glass market. Typically, the sputtered products (especially low-E) are somewhat softer due to the material type and require a different degree of handling. Both products, however, require special handling.

Within each of these basic coating types, there are two sub-

types, which correspond to their applications. One of these sub-types is reflective glass, which has a very high visible light reflectance and a mirror-like appearance.

The other coating sub-type is low-E glass, which can be further segregated as standard low-E, selective low-E and solar-control low-E. For the purposes of this discussion, these will all be grouped together. All low-E products have excellent durability once contained within an IG unit but the sputtered product, due to its higher performance nature, requires a little more care before and during assembly.

Identifying the Coated Surface

In order to protect a coated surface, you first need to determine the coated side. Several tests can be used depending upon the product.

For reflective glass, you can identify the coated side by placing the point of a pencil or pen at the surface of the glass. A single image [reflection] indicates the coated side; a double image will be seen on the non-coated side.

For both low-E and reflective coatings a meter works well to identify the coating. The coatings are metallic and will indicate a small resistance if the probes of an ohmmeter are placed on the surface. The non-coated glass surface is an insulator and will have a resistance that reads at infinity.

There also are commercially available coating detectors that work on the same principle. If a small resistance is measured when a surface is contacted, a light flashes or a sound tones indicating the coating.

Another very simple identifying method is to take the corner of a razor blade and lightly scratch the surface of the glass. (Do this near the edge of the glass where a scratch won't be seen after assembly.) If the surface is coated, a visible scratch will be present.

It should also be mentioned that it is possible to write on

some pyrolytic low-E coatings with a pencil. The pencil has no effect on the non-coated side.

Regardless of the coating detection method used, it is best to choose a location on the glass that is out of the normal viewing area, near an edge, just in case the coating is damaged from contact.

Storage

Glass, whether coated or not, needs to be stored properly. High levels of moisture from humidity can stain glass as well as coatings. Choose a clean and dry area, preferably at room temperature, and keep acids and other chemicals away from the glass. Try to store coated glass indoors and out of direct sunlight. Keep it away from loading docks or other areas in which truck exhaust can contact the glass and cause damage.

Also, be certain that the pallet or container holding the coating is stable and well-supported, and check the manufacturer for shelf life. Certain types of low-E must be used within a specific time frame. This is especially true of sputtered low-E. When only a portion of sputtered low-E is used from a container, the coating must be protected from the effects of dirt and humidity; tightly re-wrapping the container with stretch wrap is recommended. Additionally, a

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pouch of desiccant should be added under the stretch wrap to reduce humidity.

Handling

When handling coated glass, especially sputtered low-E, manually, use clean, soft gloves. Try to keep the coated surface away from conveyor rollers and harp

rack separators. Do not slide one lite against another even if there are separators between the lites. Sooner or later, the habit of sliding will lead to scratched glass and/or coating. Also, avoid touching the coated surface if possible. Again, use soft, clean gloves if touching the coating is unavoidable.

If suction cups are used, apply them only to the non-coated surface. If perspiration, saliva, fingerprints or oils contact the coating, they can cause damage as well. Wipe these off immediately.

Cutting

When cutting coated glass use an approved cutting fluid, but only in the amount needed. When possible, dry cutting is recommended. To prevent scratches, always cut coated glass with the coated side up. Keep the surface of the cutting table clean and free of debris.

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Glass Washing

When washing coated glass, adjust the washer to the manufacturer's specifications and always run with the coated side up. Only the tips of brushes should contact the coated surface. Keep the brushes in good condition. There are special low-E brushes with 0.010-inch bristle diameter that are recommended for sputtered low-E. Do not allow the glass to stop under the brushes or air knives.

A water temperature of 140°F is recommended, especially for sputtered low-E. If you must use detergent, follow the coated glass manufacturer's recommendations. A mild detergent, such as Basic H, is best.

Wash water acidity could attack the coating, so monitor it closely. Maintain a pH as close to 7 as possible.

Use a pre-rinse if the glass is especially dirty or if Lucite separator is used. Adjust the squeeze rubbers to eliminate acid transfer and scratches. A final rinse with de-ionized water is recommended.

When drying, keep filters clean and consider

removing the pinch roller that is down stream of the air knife. On some washers, this pinch roller can cause watermarks to remain after washing.

Proper preventive maintenance will go a long way in keeping problems from happening. The maintenance plan should include frequent draining and flushing of washer tanks, as well as weekly pressure washing of all washer sections.

General Fabrication

During assembly, inspect glass after each step of the process, especially after washing. Florescent lights 12 to 18 inches above the glass as it exits the washer are suggested. For inspection guidelines refer to the manufacturer's specifications and ASTM C1376. This ASTM document covers pinholes, spots, scratches, marks, rubs and other blemishes for all types of pyrolytic and sputtered coatings depending on application (vision glass, overhead glass and spandrel).

To prevent chipping and glass breakage, keep glass lites separate as they move down the con-





Photo Courtesy of Four Seasons Sunrooms.

Coated glass can not only enhance a building's performance, but also its aesthetics.

veyor line. Keep conveyor rollers, belts and air transfer tables clean and functioning properly. Again, a preventive maintenance schedule is recommended.

Special Issues for Sputtered Low-E

To delete or not delete? That is the question concerning what to do at the edges of sputter-coated low-E. Some manufacturers leave this up to the user, while others strongly recommend edge deletion. Regarding IG units, the concern is one of longevity.

Sputtered low-E is comprised typically of silver, which can corrode or tarnish in the presence of moisture. If the coating is not deleted, moisture will get to the edge of the glass and the silver will corrode. In accelerated testing, this corrosion has been seen to proceed beyond the edge seals and into the air space. Once it reaches the air space the seal is compromised and eventual failure is certain.

For assurance that the coated glass will not shorten the life of an IG unit, edge deletion is recommended for sputter-coated low-E glass. Recommendations on deletion equipment can

be obtained from the coating manufacturer. If lites are cut to size, some manufacturers offer pre-deleted edges at a nominal price.

Summary

Handling coated glasses can be summarized in a few short points. These are:

- Keep it dry;
- Keep it clean;
- Keep the coated side up;
- Inspect glass after each step;
- Create a preventive maintenance schedule for all sections of the assembly; and
- Edge delete (sputtered low-E) for longer IG life.

Keeping these points in mind will go a long way toward efficient coated glass products with low rejects. ■

the author

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