



Preserve[®] Film

Cardinal IG Company has developed a semi-transparent protective film for use on the exposed glass surfaces of IG units called Preserve[®] film. Cardinal has patent protection on its use and application. Cardinal's Preserve[®] film protects the glass surfaces during window construction, shipping, handling and installation. Preserve[®] film is a semi-transparent polyethylene film with a low tack adhesive. The film is available for application to both the indoor and outdoor IG glass surfaces and has been tested extensively for durability outdoors and resistance to common building materials.

Features and benefits of Preserve[®] film

- Eliminates the need for paper or hot melt interleaving during the palletizing and transportation of IG units.
- Dramatically reduces the number of IG units damaged during shipping, handling, window fabrication and installation.
- Reduces or eliminates marking created by handling equipment during the manufacturing process.
- Preserve[®] film allows the window manufacturer to apply their labels and stickers to the film, not the glass surface, eliminating complaints about the difficulty in removing these labels.
- Allows natural light into the worksite, which would otherwise be lost if conventional cardboard or paper masking was used.
- Dramatically lowers the cost and time associated with initial masking and cleaning of glass in the final clean-up process.

Handling of Cardinal's Preserve[®] film

Preserve[®] film applied to the outdoor surface should be removed within 9 months of window installation for best results. The film should be removed at a glass temperature between 32° and 140°F. Typically, as the film is exposed to UV, humidity and heat, the adhesion of the film to glass will increase.

In addition, as the temperature at removal decreases, the adhesion of the film to the glass will typically

increase. Under normal circumstances, removing the film within 9 months will help ensure easy removal with little to none of the film's adhesive remaining on the glass.

The adhesion will also be affected by:

- Use of high absorption coatings and tints.
- Use of Neat+[®] coated glass.
- Use of LoE-i89[™] and other exposed Low-E coatings.

These conditions could cause higher than normal adhesion of the film to the glass and residue on the glass after the film has been removed even before 9 months' time. Outdoor testing near Miami, Florida has shown under certain high humidity, sunlight and temperature conditions, the film will need to be removed from Neat+ coated glass within 6 months of exposure. This testing showed that under these conditions adhesive from the film could transfer to the glass surface. In a situation such as that, the adhesive required cleaning to remove, though after removal the functionality of the Neat+ coating was normal.

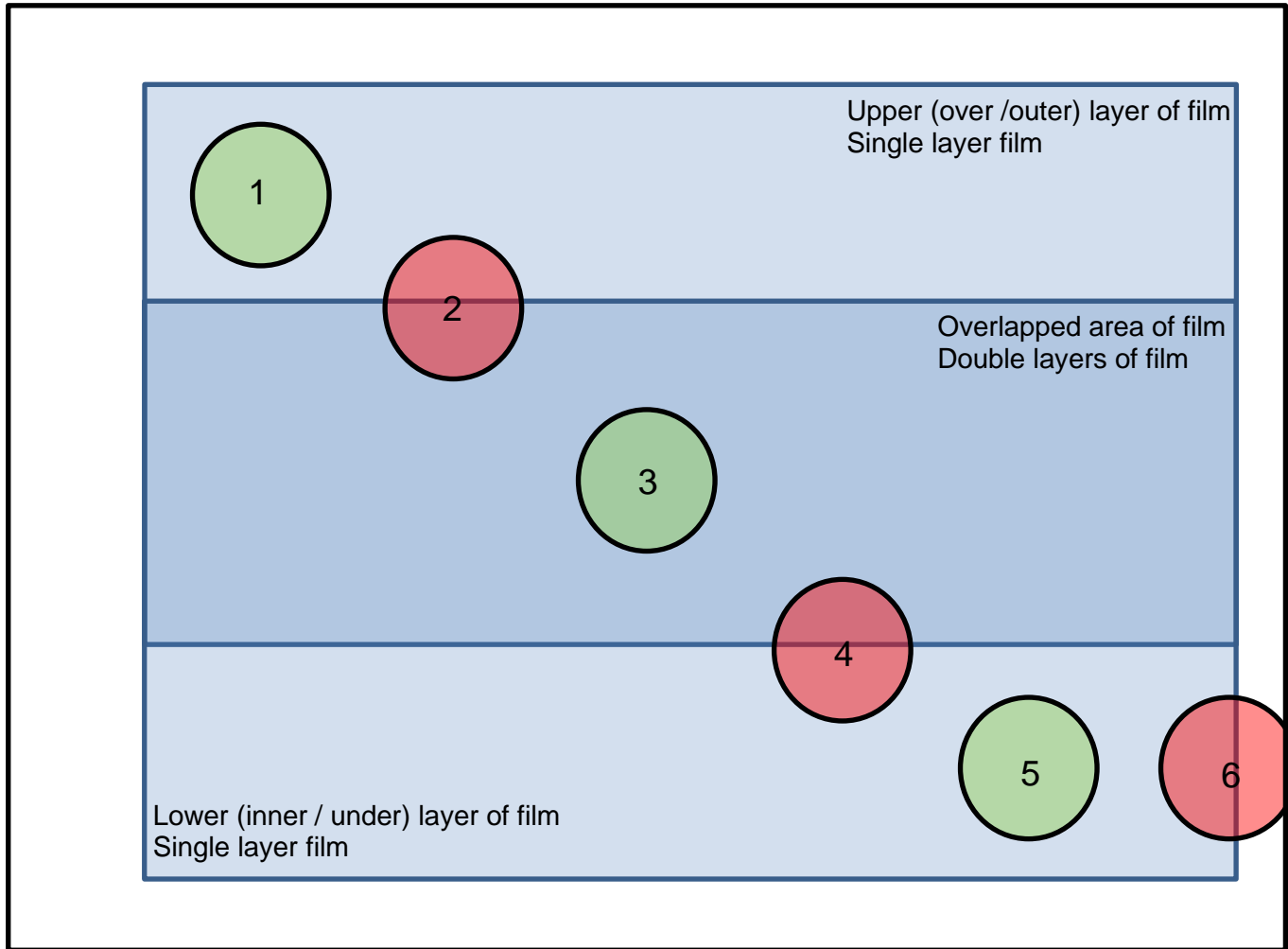
Removal is typically easiest when starting from the edge of one of the overlapping layers. If the increase in adhesion is large enough to make the starting of film removal difficult, a plastic scraper or plastic putty knife may be used to start film removal. Razor blades should never be used on the glass surface due to the high potential for scratching or scoring the glass.

Under the few rare conditions when adhesive transfer to the glass occurs, the adhesive can be removed using a Windex-type cleaner or a mild detergent solution and a Delicate Duty Scotch Brite Pad. Occasionally, a faintly visible line could appear when there is moisture on the glass at the location where the film overlaps. This history, or ghosting, is not considered a defect (see TSB IG13).



Suction and vacuum cups may be used on top of Preserve® film. Depending on the size of the units, placement of the cups and system employed, some air may become trapped under the film. This air will typically dissipate with time. It is recommended to

avoid placing the cups so they extend only partially onto the overlapping layers of film, or extend beyond the edge of the film. Placement in these areas may reduce the amount of vacuum and the subsequent lifting power of the cups.



Location Key	
1	Suction cup completely on upper layer --- Recommended Placement
2	Suction cup partially on overlap area, partially on upper layer--- Not Recommended
3	Suction cup on completely on overlap --- Recommended Placement
4	Suction cup partially on overlap and partially on lower layer --- Not Recommended
5	Suction cup completely on lower layer --- Recommended Placement
6	Suction cup over any edge of protected area --- Not Recommended

Figure IG16-1 Suction cup location guide



Preserve® film has been tested for resistance to chemicals commonly found in building and window manufacturing. This included, but was not limited to, resistance to water and oil-based stains, paints and varnishes, adhesives, sealants, cement, stucco and brick wash solution (muriatic acid).

Care should be taken not to expose the film to pressure washing or complete submersion in water. This may cause delamination of the film from the glass. Some buckling of the film may be seen at very high temperatures (greater than 140°F). Prolonged exposure to high concentrations of certain solvents may also cause buckling or bubbling of the film.

Preserve® film has been tested for resistance to brick wash solution (muriatic acid) and is resistant to brick wash when used in its typical concentration (20 to 1 dilution). Preserve® film is not intended to and does not provide brick wash protection for the sash, frame or the IG seal system. These systems may be permanently damaged by exposure to brick wash solutions. Additionally, pressure-washing systems should not be used to clean Preserve® film.

Due to the large number of chemicals used in window manufacturing and construction processes, not all have been tested for compatibility to Preserve® film. All chemicals should be tested for compatibility prior to use.

Neat+® and LoE-i89™ compatibility

Preserve® film has been extensively tested with both Neat+ and LoE-i89™ coatings. This testing has shown that the film is fully compatible with these coatings. No decrease in the function of the coatings has been noted from the use of Preserve® film. Adhesion to these coatings may be slightly elevated when compared to clear glass.

Use with patterned and obscure glass

The use of Preserve® film on the rough surface of patterned and obscure glass is not suggested. Due to the nature of the manufacturing of rolled patterned glass, the adhesion of Preserve® film to the smoother side of pattern glass may also be lower than typical. The uneven nature of these surfaces does not facilitate good adhesion of Preserve® film. The film will only achieve adhesion to the high points of these glass types. The decreased adhesion may allow the film to fall off the glass, or the non-adhered areas may allow debris and water to gather under the film.

Static discharge during removal

There is potential for an electrical charge to form on the glass surface and Preserve film during removal process. This charge has the ability to create an electrical spark and ignite flammable or explosive materials. Because of this potential, it is recommended flammable and explosive chemicals not be present during the removal process including: solvent soaked rags, mineral spirits, paint thinners / cleaners, spray foam insulation, and spray paints.

A number of things may reduce the amount of the electrical charge during the removal process:

- Misting the film surface with a light water spray prior to removal
- Removing the film at a slow speed
- Touching the film to the glass surface often during the removal process
- Increasing the humidity in the air prior to removal

Even with these techniques, the risk for sparks will remain and explosive / flammable materials should not be present during masking removal.

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