

Window Films Provide Decades of Safety

Many years ago a new skyscraper, the Hancock Tower, was built which forever changed the Boston skyline. A design marvel created by one of the world's most famous architects, it immediately became one of the city's most recognizable buildings because the entire building was sheathed in massive slabs of reflective glass. Older buildings could be seen reflected in its facade from miles away.

There was one minor issue. The glass kept falling out of the building! This obviously concerned city residents and government officials, alike. A multi-block area was cordoned off around the building for what seemed like years. This debacle prompted Time Magazine to publish an article entitled "Those Window Pains" in October of 1973. In fact, the building came to be known by locals as "The Plywood Palace" due to the 3500 plus pieces of plywood put in place to replace the fallen glass.

Numerous steps were taken to correct the flaw. Counterweights were installed at both ends of the building to minimize sway; every window was replaced with thermally tempered glass, and the entire structure was stiffened with the installation of additional steel bracing throughout. These efforts alleviated many of the issues but did not completely eliminate the glass breakage issues.

Then, along came a local window film manufacturer, Madico, Inc. of Woburn Mass., a suburb about 10 miles north of Boston. Working in conjunction with the renowned Massachusetts Institute of Technology, Madico developed a safety film that, when applied to the glass with a pressure sensitive adhesive and attached to the window frames using a decorative mullion, would hold the broken glass in place and prevent dangerous shards from injuring pedestrians walking below the 600 foot tower.

To Madico's knowledge this is the first recorded usage of attached safety film.

Over the past decade, safety films have become widely recognized for their ability to protect people and property from terrorist bombings, industrial accidents, wind borne debris from windstorms, and nuisances like intrusion and graffiti. These materials are generally manufactured from layers of polyethylene terephthalate (PET) and various types of adhesives. They are applied to glass much like wallpaper, bonding to the glass with proprietary pressure sensitive adhesives. Once cured to the glass, the films hold the glass together in the event of breakage and, if attached to the window frame with one type of the many available attachment systems such as FrameGard® or Frameflex®, can help prevent blast loads and debris from entering a building when subjected to such forces.

But one question persists: How long can a window film last?

Most film manufacturers subject their products to rigorous accelerated weathering testing before releasing these products to the public. This testing is comprised of high intensity ultraviolet (UV) light exposure, high and low temperatures, as well as extraordinary levels of humidity. This testing is designed to emulate years of use in the field. Many testers also expose films to natural environmental conditions at independent facilities throughout the "sun belt" ensure their real world weatherability. All

safety films should also be tested at independent laboratories to determine the level of blast, windstorm, intrusion, and safety standards they will meet.

But time is the real test ... and Madico has some remarkable results.

Recently Madico had the opportunity to test the safety film it applied to the Hancock Tower over 24 years ago. While the accelerated weathering the films are subjected to provide a good idea how the films will perform over time, there is no substitute to real life experience.

During this evaluation Madico tested for:

- Peel value, the force needed to remove the film from the glass. This is a measure of how well the film will hold onto the glass when broken,
- Tensile Strength, the actual strength of the PET and,
- UV blocking, the amount of ultraviolet radiation blocked by the film.

The results were enlightening. Peel value remained +/- 3% of the original manufactured material. Tensile strength tested at over 90% of its original value. And UV Blocking maintained nearly 95% of its original blocking power.

Madico prides itself on making the highest quality window safety film available. By having the opportunity to test safety films that have been in place for nearly a quarter century, Madico can say with unmatched confidence its safety films will continue to protect people and property from glass failure, natural disaster and even terrorist bombings for decades.