

SAFETY & SECURITY COMMON QUESTIONS

Forced-entry protection for schools



THE LEADING MANUFACTURER AND
MARKETER OF HIGH PERFORMANCE
WINDOW FILM

Equipping school officials and specifiers with the right answers to commonly asked questions regarding forced-entry protection for schools

1. What testing methods should we discuss when dealing with forced-entry protection?

The proper way to judge suitability of a safety and security film for helping deter forced entry is by actual forced-entry testing. In the U.S. the most recognized test method for forced entry is UL 972, however, as the International Window Film Association (IWFA) indicates (see IWFA Letter below), UL has declared that UL certification can only be claimed for factory-manufactured products, and cannot be claimed by testing of retrofit products such as safety and security films.

There is, however, a recognized standard in Europe for forced entry protection, EN-356. Eastman's 13mil product has successfully passed EN-356 testing on 5/32" (4.2mm) annealed glass. See attached report. Any EN-356 test reports must indicate which side of glass was impacted (glass or film side – glass side should be impacted as film is typically installed on the room side). Test reports must also indicate glass thickness (should be ¼-inch (6mm) or thinner (thickness normally encountered in buildings) and if glass is laminated or tempered (laminated or thicker tempered glass may pass this test without film). Eastman's report indicates 5/32-inch (4.2mm) monolithic glass, non-laminated annealed glass, and clearly indicates the glass side was impacted. Test reports that do not indicate glass type/thickness used or which side was impacted are suspect. Also pay close attention to the drop height used during the testing for the level of protection provided by a glass/film combination.

2. How long does it take for forced entry to occur?

Recent demonstrations of forced entry by Eastman show the following generalizations: Annealed or tempered glass without film – entry within 1-2 seconds. Annealed or tempered glass with thick (13mil) safety film without an attachment

system – entry within 20 secs to 1:20. Annealed or tempered glass with thick (13mil) safety film with a silicone attachment – entry within 50 seconds to 1:30. youtu.be/Cfjzr3i8Ujk

The ranges above are due to different types of attack instruments (baseball bat, crowbar, or shooting of glass and kicking the window or impacting with the butt of a rifle) and how aggressive the attacker would be. The above ranges are also for 13mil safety film and would vary with use of thinner films. youtu.be/GAxdpN6Nkl8

No film can absolutely prevent forced entry. Safety and security film will only help increase the amount of time before an intruder can gain entry.

3. Will applying safety and security film to a window make the window bullet resistant or bullet proof?

No films are known to be ballistic resistant on ¼-inch (6mm) non-laminated, non-tempered glass for bullets with the impact force of a 9mm pistol or higher. See link to IWFA statement on this topic below. Any manufacturer claiming such resistance should be immediately questioned and should show independent testing evidence by a certified lab of proof of such a claim and the report must state that the glass was either ¼-inch (6mm) or thinner annealed or tempered glass, and not laminated glass. Laminated glass has ballistic resistant properties by itself as will tempered glass thicker than ¼ inch (6mm).

www.iwfa.com/professional/ProfessionalResources/BulletResistance.aspx

4. Should I use blast test or wind storm test reports to help judge resistance to forced entry? Both blasts and forced entry are just large forces impacting the glass/film?

The impact on a window from a blast is **MANY** times that of forced entry. The force on a 4ft x 6ft window from a 6 psi bomb blast is over 20,000 pounds of force, over the entire window. Forced entry is a much smaller force over a much smaller area, usually with a blunt instrument (baseball bat, crowbar, tire iron, etc.).

Test standards for forced-entry, such as the EN-356, were developed to best simulate an attempted forced-entry and should be used to judge forced-entry protection. Blast test reports should be used for determining blast protection from a film/glass combination. Wind storm reports should be used for determining protection from a film/glass combination in a wind storm event.

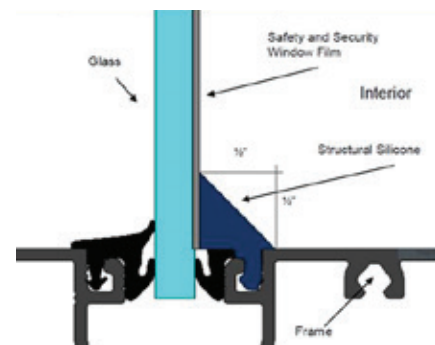
5. Can I judge forced-entry protection by evaluating physical properties such as tensile, break, puncture or peel strength?

In a word, no. The forces exerted on a film on impact during a forced-entry attempt occur over extremely short time frames (thousandths of a second). These forces also occur in a twisting, three-dimensional nature. Physical property tests are done at comparatively slow rates, over several seconds and most occur in a single, one-dimension direction. As such, one should not equate higher physical property values as an indicator of improved forced-entry protection. The best way to judge products for forced-entry protection is to evaluate their independent, certified testing to a well-known forced-entry standard, such as EN-356.

5. What is an attachment system and why is one needed for forced-entry protection?

An attachment system is a method to help hold broken glass and film in the window frame during an event. The event can be a bomb blast, windstorm or attempted forced-entry.

One type of attachment system is structural silicone caulking (Dow Corning 995 or similar) simultaneously applied over the window film and window frame forming a strong bond that helps hold the broken glass and film to the frame during impact (see diagram below). Other attachment systems may be used as well, however, Eastman Performance Films, LLC recommends a silicone attachment system for forced-entry protection as we have successfully completed several demonstrations using this type of system.



Internal testing indicates that a window with safety and security film with an attachment system provides improved protection against a would-be intruder compared to a window that has film applied without an attachment system.



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TO WHOM IT MAY CONCERN:

The International Window Film Association (IWFA) has concerns about any written specification or recommendation that would claim that any individual window film product meets the UL-972 Standard for Burglary-Resisting Glazing Material.

Here is a list of the reasons the IWFA believes that no window film product alone should be listed as meeting this Standard:

- United Laboratories (UL) does not have any test for a product which will be retrofit to an existing product.
- The test itself considers window film to be a part of a component (the "glazing") used in the glazing system which will be used in testing.
- The test also requires that the film must be applied to the glass in a "factory setting" and therefore cannot be "field-applied".
- Certification requires that the test be either performed at a UL facility or witnessed by a UL official representative.
- Just because a particular film has been installed on a specific type of glass and successfully tested to meet the requirements for UL-972 (or UL-972C) does not mean that a similar film or the same film installed on any other glass is also considered to have met those requirements.
- Installation of a film on glass which has already been certified for UL-972 (or UL-972C) may create a situation where the glazing system might become de-certified. This issue would need to be addressed with the building management before installation of the window film.

Remember that a demonstration, no matter how dramatic it may be, is not a substitute for testing for UL certification. Likewise, testing by a company "to the UL-972 (or UL-972C) standard" or "using UL test procedures" does not entitle that company to claim that its product meets the requirements for UL-972 (or UL-972C).

Darrell Smith
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