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Openings

## Openings (Windows and Doors)

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Protecting windows and doors (including sliding glass doors and garage doors) from windborne debris is an important part of protecting your home, your belongings, **and your roof** in a hurricane. Your home is particularly vulnerable to having unprotected windows being broken by windborne debris if:



**Tiles from surrounding roofs banged up these shutters**

(click image for larger version)

- The design wind speed for your area is 130 mph or greater regardless of tree cover or your surroundings
- The design wind speed for your area is 120 mph or greater and you live in an area with moderate tree cover
- You live in a neighborhood with few trees and the design wind speed for your area is 110 mph or greater
- Vulnerability goes up significantly if you have a tile roof or if one or more of your neighbors has a tile roof, a flat roof with gravel ballast or, old shingles that are starting to curl

Also, if your home is an older home or was built in an area where they have not been following a modern high-wind building code, you may not have hurricane clips or straps holding your roof structure to your walls. If that is the case, window and door protection may make the critical difference between losing your roof and keeping it on. If a large window or door is broken open on the wall facing into the wind, the overall uplift forces that are trying to lift the roof off your house may be doubled. Research has shown that protecting the windows and doors can raise the wind speed required to lift your roof off your house by one to two hurricane intensity categories. In other words, if it is likely that the roof of your home would lift off during a Category 2 hurricane if a large window broke open on the windward side of your house, it might take a Category 3 or possibly even a Category 4 storm to lift the roof off if all of the windows and doors are

protected.

Installing shutters over windows and doors can protect them from the impacts of windborne debris and can keep wind pressures from building up in your house to the point where it significantly increases the uplift forces on the roof. However, it probably won't keep the doors and windows from bursting open from wind pressure if they are weak or poorly anchored to the walls of the house.

Joe Lstiburek of Building Science Corporation likes to point out that there are only two types of windows and doors, "Those that leak and those that are going to leak." This comment actually contains a tremendous amount of truth since the test standards for water intrusion are set at a very small fraction of the design pressure for the window or door. A realistic example is that if the window or door you have in your home is rated for 50 pounds per square foot of wind pressure (a pressure you might expect from a storm with wind gusts approaching 140 mph) it only has to resist a pressure of 7.5 pounds per square foot without leaking (a pressure that might occur when wind gusts reach about 55 mph) to pass the water intrusion test standard. Since windows and doors are going to leak, he makes the point that the key is to minimize or manage the water intrusion. Keeping water from being driven against and building up on windows and doors is one way to try and minimize the water intrusion during a hurricane. Fixed glass window systems (windows that are not operable) with impact resistant glass that is mounted into the frames with structural adhesives is another approach.

Before we move on to methods for protecting windows and doors, it is important to address a couple of common misconceptions about ways to protect windows.

**Tape:** We often see windows with masking tape, duct tape, or any other type of tape placed across the glass and are asked whether this will provide protection against storm debris - the unequivocal answer is **NO**. Hurricanes are devastating forces of nature and more substantial protection than tape is required to withstand their wrath.



(click image for larger version)

**Window Film:** Some homeowners have considered window film as an alternative to other window protection systems. The most common method of installing window film is known as "daylight installation." The process involves pre-cutting the adhesive-backed film to a size slightly larger than the windowpane to which it will be applied. Then, at the time of installation, the film is trimmed back to the size of the windowpane. This type of installation does nothing to keep the window attached to the frame, so it provides very little or no additional protection from winds and rain entering your house.

One of the most common types of window film is known as "safety film."



This type of film should never be less than 4 mils in thickness. Typically, safety film products meet the same break-safe requirements as tempered safety glass. This means that the safety film should hold the glass shards together, thus preventing a potential hazard from sharp, broken glass. Safety film may also offer a degree of protection in the case of high winds, particularly if it is well anchored to the window frame using a method that has been shown to keep the film in place after the window is broken. Window film installations with proper anchorage tend to be quite expensive compared to the "daylight installation" and usually have only been proven for commercial applications where the frames are more substantial than those typically found in residences. Some products have passed the small missile test standard when applied to Commercial Windows glazed with 3/16 tempered glass and the film is adhered or mechanically fastened to the window frame, but we are not aware of any systems that have passed the large (9 lb lumber) missile impact at 34 mph. Experts and the building codes do not consider window film to be an adequate protection for windows of homes in hurricane-prone areas.

The link listed below is to the International Window Film Associations website, this will take you to a letter they prepared for the Florida Attorney General's office concerning dealers selling window film to Florida residents for use as a hurricane protection product.

#### [IWFA Letter to Florida State Attorneys](#)

**What You Should Do:** As a homeowner in a hurricane-prone area, you should always purchase a product or system that has been tested and certified as passing one of the large missile (i.e. 9-lb 2x4 wood member striking end on at a specified impact speed) impact-resistant standards. See [Local and National Standards](#) to get more information on the various test standards and performance requirements. In Florida you can determine if the product has been tested and certified by looking at the label on the product or by looking it up on the Florida Department of Community Affairs product approval website.

#### [Florida Department of Community Affairs Product Approval](#)

For Miami/Dade and Broward County approvals you can look it up on their product approval web site.

#### [Miami-Dade County Building Code Compliance Product Search](#)

Manufacturer Members of the International Hurricane Protection Association, a Not-for-Profit trade association, have all submitted for independent testing and engineering. Member Manufacturers produce products that have the necessary Texas Department of Insurance, Miami-Dade and/or Florida Building Code approvals for use in Florida and Texas. This is important because buying an unapproved system means you will not be eligible for Windstorm Insurance Discounts, and the strength or reliability of the system will likely be unknown. It is possible to waste your investment in a protection system or on a product that is substandard or



virtually worthless. Look for the IHPA logo at dealers and manufacturer's websites this will help identify systems that are Florida Building Code and International Building Code compliant.

**The best way to protect your existing windows and doors** from damage in hurricanes is to install tested and approved impact-resistant shutters over **all** windows and glass doors. Not only do they protect doors and windows from most common wind-borne objects, but they can reduce the chances of damage caused by pressurization of your home if a window or door is broken.

The easiest retrofits are typically those that simply cover the opening with an approved structural panel. In addition to [Commercial Products](#) that are professionally installed, there are a wide variety of [Do-it-Yourself Options](#), some of which will qualify for Windstorm Insurance Discounts and some that may not qualify. **Note that insurance companies will not give a Windstorm Insurance Discount unless all openings are protected by an approved product.**

You can find out more about windborne debris protection options by clicking on the links below. The information has been organized according to the type of "opening" you are trying to protect. A matrix that summarizes protection options has been prepared and can be viewed or printed. See the link below.

[HRG\\_Shutter\\_Matix.pdf](#)

[Protecting Windows](#)  
[Protecting Entry Doors](#)  
[Protecting Sliding Glass Doors](#)  
[Protecting Garage Doors](#)

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