



BENEFITS OF Daylighting

 SERIES

Can a Skylight Survive a Hurricane?

Sunoptics®, the leader in integrated daylighting solutions, presents this educational series on the benefits of daylighting where we live, work and learn.

The words “skylight” and “hurricane” seemingly don’t go together. In fact, considering hurricanes come with intense rain, high wind, increased wind speed, air pressure and even flying debris, the idea of anything like skylights and windows can be concerning when a hurricane hits land. Will a skylight on top of a building survive a hurricane, and will it keep the occupants and building safe from the driving rain and flying debris going through the air? Will a skylight hold up to fluctuations of positive and negative pressure from the wind and wind-borne debris? Every business owner, architect and designer must take into account these considerations when designing commercial, industrial and educational buildings in high wind/hurricane zones.

Hurricanes and extreme winds are inevitable hazards to the U.S. Gulf and eastern coastal areas. The areas with the highest return periods for hurricanes are coastal North Carolina, South Florida and Southeast Louisiana. Buildings in these coastal areas are consistently subjected to extreme weather conditions.

Selecting the Right Skylight Product

In Florida, the sunshine state, both the Florida Building Code and the building standards specific for Miami-Dade, the highest wind zone area in Florida, are concerned with the high impact performance of a building product that is sustainable in such extreme weather conditions. Additional product tests are performed to ensure that skylights meet those strict standards.

Sunoptics® has tested and been approved by the Florida Building Council (FBC) for Broward County and Miami-Dade NOA, two of the strictest and hardest hit areas in Florida. Sunoptics tests to the ASTM E1996/TAS 201 (large and small missile test), TAS 202 (static air pressure test), and ASTM E1886/TAS 203 (cyclical wind pressure) building standards.

Sunoptics® manufactures the Signature™ Series (SIG) HVHZ/ Miami-Dade NOA skylight to ensure it meets the wind loads required by the FBC and Miami-Dade NOA **without** placing a

screw through the lens. Our frame is designed to hold the lens in place, meeting the positive and negative pressure required by the Florida Building Codes. Plastic material expands and contracts at a different rate than most metals. Therefore, piercing plastic with a screw or nail could compromise the skylight, creating possible cracks and enlarged holes, producing additional stress on the plastic material, and ultimately changing the integrity of the skylight.

When reviewing key top-lighting products, it is essential to check the product approval databases for both the Florida Building Code and Miami-Dade to ensure that the products meet the minimum requirements and how the products meet those requirements. Review the drawings to understand better how the product is installed in high-velocity hurricane zones and be wary of products that install screws through the plastic lenses to the frame.

Why Consider Sunoptics® Prismatic Skylights in Storm-Prone Regions?

In addition to meeting testing requirements for hurricane and high-wind zones, Sunoptics® Signatures™ Series prismatic skylights’ patented dome shape captures low-angle daylight (early morning/late afternoon), allowing the space’s interior to receive more natural light throughout the entire daylit hours. This proprietary shape coupled with Sunoptics’ prismatic material offers an even spread of light throughout the space. This also equates to fewer skylights needed, with greater efficiencies gained. So even if the power is out following a heavy storm, you



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will still benefit from the available natural, diffused light.

Sunoptics® Signatures™ Series prismatic skylights have literally withstood the test of time. With over 40 years of manufacturing skylights, we have skylights installed in HVHZ-prone areas that are still standing after years of extreme weather conditions. Sunoptics' ClearArmour® polycarbonate over acrylic double-glazed solution offers protection from fast-moving debris during high wind episodes, helping to keep the building occupants safe. Additionally, this double-glazed solution offers a 0.42 or 0.31 solar heat gain coefficient (SHGC), indicating less heat gain inside the building from the daylight coming through the skylight. With the possibility of power outages, you gain the daylight needed in the space without significant heat, keeping the occupants more comfortable during this time.



3 Things to Consider When Choosing a Skylight for Hurricane/ High-Wind Zones

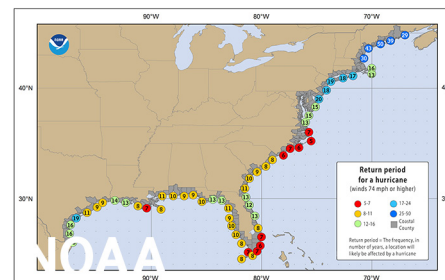
1. A curb-mounted skylight versus a self-flashing skylight. Should debris hit or damage your skylight, consider costs (labor and material) for replacing it.
 - Curb-mounted commercial fixed skylights consist of a wood or metal curb mounted/connected to the roof deck. The skylight with an integrated frame is placed on top, like a shoebox lid, and connected. Should debris hit or damage your skylight, you would need only to replace the skylight, not the curb.
 - A self-flashing skylight is designed to fit directly over the rough opening in the roof deck. The curb and flashing are built directly into the skylight and are fully sealed. These skylights tend to be more costly but require less labor and materials for installation. However, if damage occurs, the entire unit must be replaced.
2. Ensure the skylight design has lenses securely attached to the integral skylight frame **WITHOUT** screws.
3. Make sure the skylight meets test requirements specific to the application state and region – dare to compare!

QUICK HURRICANE FACTS

- When a tropical storm's maximum sustained winds reach 74 mph, it is called a hurricane.
- The [Saffir-Simpson Hurricane Wind Scale](#)¹ categorizes hurricanes from 1 to 5. The higher the category, the greater the hurricane's potential for property damage.

Category	Sustained Winds	Level of Damage
1	74-95 mph	Some
2	96-110 mph	Extensive
3 (major)	111-129 mph	Devastating
4 (major)	130-156 mph	Catastrophic
5 (major)	157 mph or higher	Catastrophic – total roof failure

- Per building codes, skylights must meet the design pressure of 60 PSF as part of the testing process to ensure the product can withstand high winds.
 - 60 PSF = negative/positive air pressure per square foot; equivalent to 155.04 MPH²
- Hurricane season begins on June 1 and ends on November 20 – although hurricanes can, and have, occurred outside of this time frame.
- Massive storm systems occur, on average, 12 times a year in the Atlantic basin.

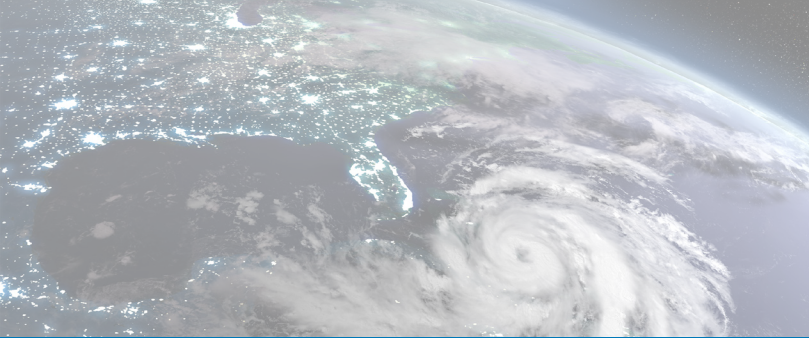


- Of the 310-billion-dollar weather disasters between 1980 and 2021, tropical cyclones (or hurricanes) have caused the most damage: over \$1.1 trillion total, with an average cost of \$20.5 billion per event.

Footnotes:

¹ – National Hurricane Center and Central Pacific Hurricane Center, [Saffir-Simpson Hurricane Wind Scale](#)

² – National Certified Testing Laboratories, <https://nctlinc.com/velocity-chart/>



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The Sunoptics Difference

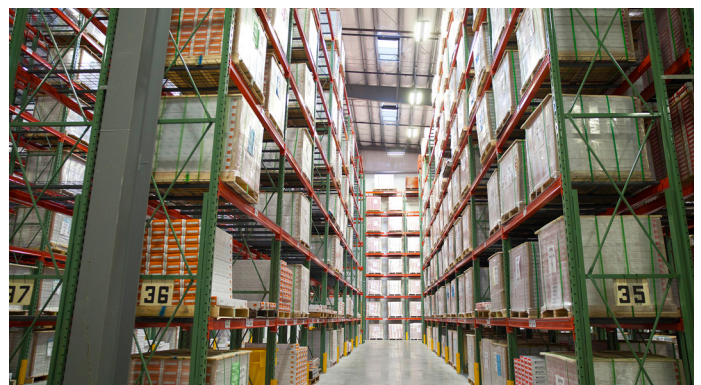
Since 1978, Sunoptics® has been a trusted partner for providing superior natural light and leak-free products for roofers, architects, and building owners. To ensure high-grade products, Sunoptics extrudes its own plastics using high-quality materials. This allows for total quality control of the manufacturing process and optical quality of the lenses.

As part of the Acuity Brands® portfolio, Sunoptics® offers the advantage of providing holistic daylighting product solutions consisting of skylights, LED luminaires, and advanced lighting controls from one source.

The Sunoptics Advantage: Sunoptics® products are tested and certified by independent third-party organizations to ensure compliance with safety, quality, and performance standards. Third-party test results are available on Sunoptics.com.

At Sunoptics®, we believe,
There's No Greater Efficiency Than Off!®

Please visit and bookmark our Daylighting Blog at:
<https://insights.acuitybrands.com/daylighting> for more articles in the Benefits of Daylighting series.



About the Authors:

Dana Carlson, MBA, is the Director of Product Market for Sunoptics® Prismatic Skylights and Daylighting Systems, an Acuity Brands Company. Dana has spent her career educating, promoting, and marketing daylighting solutions for the residential, commercial, and educational markets. She is passionate about the benefits of daylight and human well-being, emphasizing the importance of the total lighting solution, including daylighting, electric lighting, and controls to create a well-illuminated and healthy environment.

Karin McReynolds is the Senior Marketing Manager for Sunoptics® Prismatic Skylights and Daylighting Systems. Her 18 years of experience with Acuity Brands in lighting, daylighting, and controls solutions continue to fuel her passion for empowering her team and customers through education and timely marketing communications of today's innovative technologies.