

## VENTED ROOF SYSTEMS COMPARISON

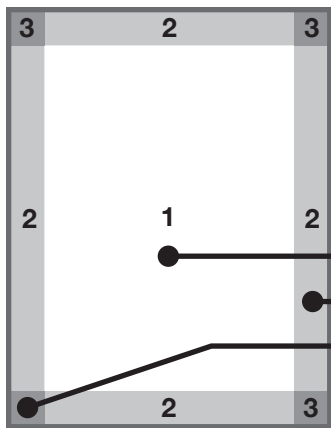


**VS.**



VENTED ROOF SYSTEMS COMPARISON	WINDSMART SYSTEMS® WINDFORCE 365®	VACUSEAL™ OR V2T
<b>Type of Vented Roof System</b>	Air-sealed, pressure- <b>equalized</b> roof system® (uses naturally occurring wind uplift – low pressure)	Air sealed, pressure <b>created</b> roof system (must create low air pressure from dynamic air flow)
<b>Vent Location</b>	Roof corners and perimeters (Highest wind uplift zones) <sup>1</sup>	Field of the roof (Lowest wind uplift zone)
<b>Vent Purpose</b>	Simple vent system design that equalizes air pressure to neutralize destructive wind uplift forces <sup>1</sup>	More complex vent system design that must generate (create) low air pressure to neutralize destructive wind uplift forces <sup>2</sup>
<b>Requires an Air Barrier and Perimeter/ Penetration Air Seals</b>	Yes <sup>3</sup>	Yes <sup>3</sup>
<b>Requires Distribution Strips to Transfer Pressure Differential</b>	No <sup>4</sup> (fewer parts, less complicated installation)	Yes
<b>Source of Published Wind Uplift Testing</b>	Classified – UL 1897	Classified – UL 1897
– <b>Wind Uplift Resistance (Wood Decks)</b>	Highest (210 PSF) <sup>5</sup>	High (195 PSF)
– <b>Wind Uplift Resistance (Metal Decks)</b>	Highest (285 PSF) <sup>5</sup>	Not tested or no published tests
– <b>Wind Uplift Resistance (Concrete Decks)</b>	Highest (495 PSF) <sup>5</sup>	Not tested or no published tests
<b>Entrapped Moisture Removal Capabilities</b>	Claimed, tested and verified entrapped moisture removal capabilities <sup>6</sup>	“Drying Effect” is claimed
<b>Vent Design</b>	Patented, high-impact resistance, modular design <sup>7</sup>	Patented
<b>Vent Source of Manufacturing</b>	Made in the USA	Made in China
<b>Ease/Cost of Installation</b>	Fewer components and larger library of air seal application options – lower installed labor costs <sup>8</sup>	More required components (distribution strips) and fewer applications options – higher installed labor costs
<b>Manufacturer Warranty</b>	Broad array of warranty options including full systems warranties through multiple manufacturers (Johns Manville, Sika Sarnafil, & WindSmart Warranty Services)	Warranty options through Carlisle & Versico

*(Please see reverse side.)*



## ASCE 7 DESIGN WIND LOAD STANDARDS

ASCE (American Society of Civil Engineers) identifies three primary areas of differing wind loads on a roof: roof field, roof perimeter and roof corners.

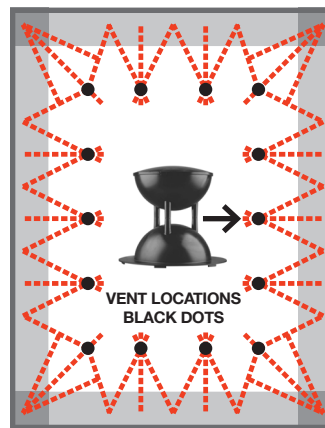
Within ASCE 7 these areas are designated as zones 1, 2 and 3 respectively.

- ZONE 1 (ROOF FIELD)** Lowest wind loads
- ZONE 2 (ROOF PERIMETER)** High wind loads
- ZONE 3 (ROOF CORNERS)** Highest wind loads



## WindSmart Systems WindForce 365® Vent

WindSmart WindForce 365® vents are located in the highest wind uplift zones 2 and 3 allowing for immediate equalization and transfer of high pressure from all wind uplift zones.



## VacuSeal™ or V2T Vent

VacuSeal / V2T vents are located in the lowest wind uplift zone 1 requiring a vent capable of creating significant quantities of low air pressure. A highway of distribution strips are required to assist with needed pressure transfer from zones 2 and 3.

**1** WindSmart WindForce 365® vents are placed in the highest wind uplift zones 2 and 3 (roof perimeter and corners) where the damaging forces of wind uplift are greatest. Wind uplift is low pressure. The WindForce 365 vent is an optimized pressure equalization device. The high wind uplift pressures at the perimeter are equalized, and because pressure flows from high to low, pressure is equalized below the membrane in the field of the roof by evacuating higher air pressure from the field of the roof through the WindForce 365 vents.

**2** VacuSeal and V2T vents are placed in the lowest wind uplift zone 1 (roof field) where the damaging forces of wind uplift are the least. The device requires clear unobstructed air flow. The VacuSeal / V2T vents must then convert the dynamic (unobstructed) air flow in the field of the roof to create significant quantities of low air pressure to overcome wind uplift in the zones 2 and 3. Because of vent locations, a complicated highway of distribution strips are required to assist with pressure transfer. The capability of the device to generate low pressure is a critical factor in the VacuSeal / V2T total system performance. In a report published by V2T in wind tunnel testing up to 101 MPH, the report concludes, "based upon the current test data, the influence of the roof vent was only observed for a 2.5 ft. radius from the center of the vent." (See footnote A)

**3** Vented roof systems require air barriers and perimeter/penetration air seals to perform properly.

**4** By locating WindSmart WindForce 365 vents in zones 2 and 3 where abundant low pressure differential continually reoccurs, the evacuation of higher pressure from the field of the roof is easily achieved. The vent location and the optimized flow capacity of the WindForce 365 eliminate the need for complex distribution strips.

**5** In UL wind uplift testing, the WindForce 365 vent performed with the greatest capability to resist wind uplift. With its optimized flow capabilities, the WindForce 365 test results concluded with no membrane lifting or failure within the WindSmart System. The WindForce 365 vent is classified in the widest variety

of material types and applications within the vented roof market. Comparative UL Classifications are available at:

- WindSmart, UL TG1K-R3880, <https://iq.ulprospector.com/en/profile?e=241386>
- For V2T, UL TG1K - R25921, <https://iq.ulprospector.com/en/profile?e=149517>
- Carlisle Syntec, UL TG1K.R8103, <https://iq.ulprospector.com/en/profile?e=149538>

**6** In an independent "Study of Moisture Removal from a Roof Assembly equipped with the WindSmart Equalization Vent after Dynamic Wind Uplift Conditioning using CSA A123.21" a single WindForce 365 vent removed 16% of entrapped moisture in 10 hours of dynamic wind testing. Additional testing has been validated through independent field verifications. See WindSmart Case Studies from US Department of Energy and Des Moines Public Schools.

**7** The modular design of the WindForce 365 vent allows for onsite quality inspections of applicator coring techniques. Vent modularity allows system modifications, if necessary, without cutting open the roof or removing vent flashings.

**8** Air barrier and air sealing methodologies are critical to the performance of any vented system. WindSmart has developed the broadest array of detailed air sealing techniques with installation notes. The process of reviewing applications and delivering accurate application and drawings helps to assure more cost effective and higher performing roof assemblies.

**Footnote A** Performance of the Acrylife Roof Vent, Report IBHS-12XX01, (Conclusion, page 7, 4th paragraph). Full report available at: <https://www.v2troofsystem.com/docs/IBHS-Report-for-Vent-test.pdf>