



Wind Vent Roofing + Phase Change Material

**DEFEND against WIND
SHIELD against HEAT**

**BEST IN CLASS:
Roof & Wind Warranties
Thermal & Energy Performance**



ENVIRONMENTAL ROOFING COMPONENTS

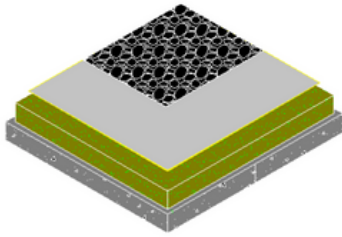
Ph: (800) 509-2199



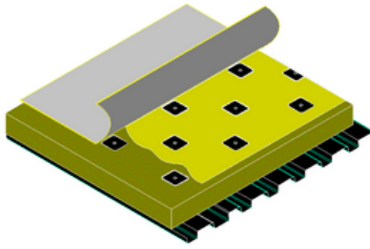
PHASE CHANGE MATERIALS

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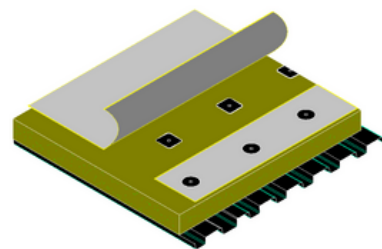
Traditional Low Slope Roofing Systems



Ballasted



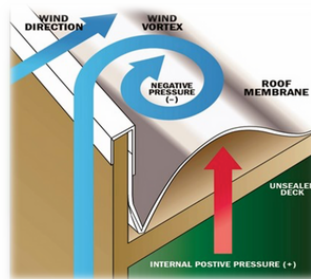
Fully Adhered



Mechanically Attached

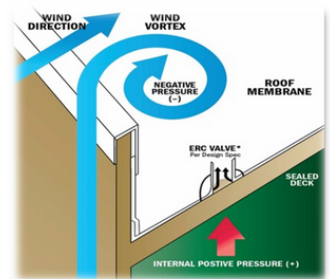
The Wind Vent Roofing system from ERC uses the pressure of the wind, to achieve a vacuum suction effect. With far greater strength and reliability than glues, screws or ballasting can achieve, the system fights wind **WITH** wind.

The Problem.



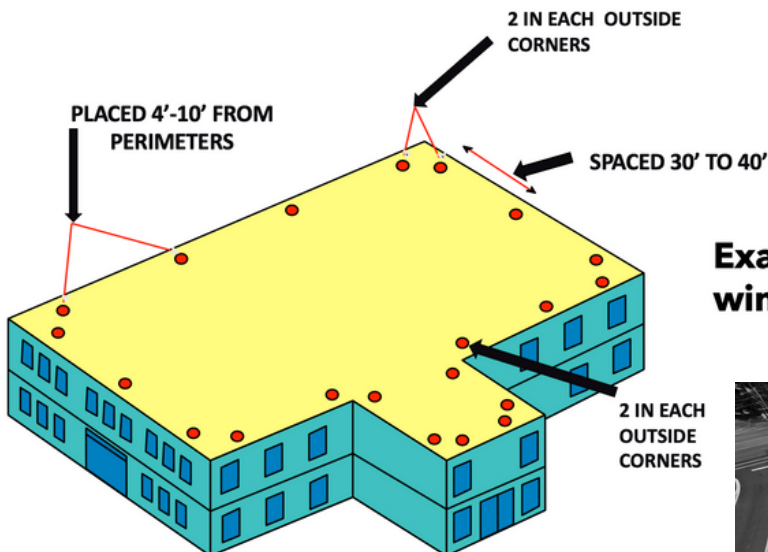
Negative pressure above a roof system can cause extreme damage/stress to roof systems. These effects are amplified with higher winds.

The Solution.



By creating an airtight system, the One-Way Vortex Valves will reverse the effects of uplift. The Vents allow the wind to vacuum out air from the system. This vacuum becomes stronger with the wind and will constantly vaporize/remove any existing moisture from the system.

THE WIND VENT ROOFING SOLUTION



Example of typical wind valve placement.





Templok

PASSIVE THERMAL ENERGY STORAGE (P-TES™)

Insolcorp's Templok™ Phase Change Material is built around a fundamental property of Nature: The natural tendency of materials to absorb heat when they melt (phase change from solid to liquid/gel) and to release heat when they solidify (phase change from liquid/gel to solid). When these phase change materials are placed in quantity as a panelized layer within a roof system, they will naturally absorb heat or "cool" the roof envelope during the day and release that absorbed heat at night. Working to provide year round comfort with heating and cooling savings.

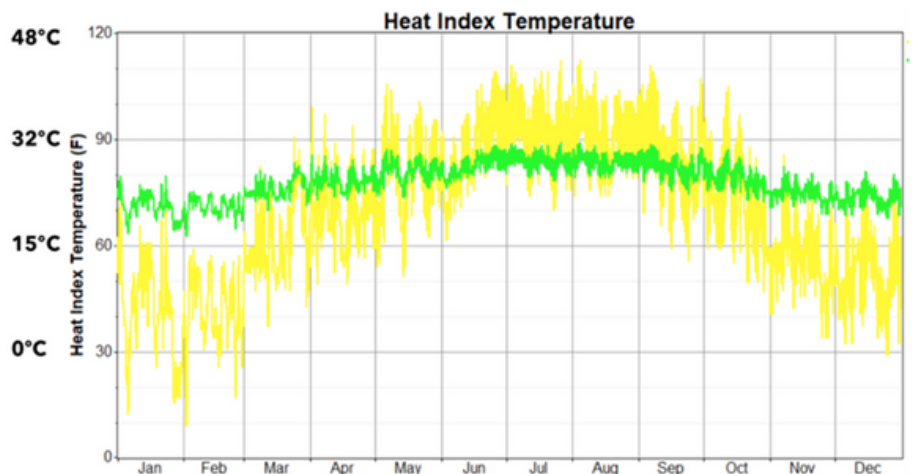
How Does PCM Work in Roofing?

In summer as the sun rises, roof temperatures rise rapidly. With the ability to reach well over 120°F, the insulation below is the only critical element to help **SLOW** how quickly the roof system heats up the space below. The hope is that insulation will slow down the rise for long enough for the sun to go down. Thereby reducing the "peak" temperature and "peak cooling".

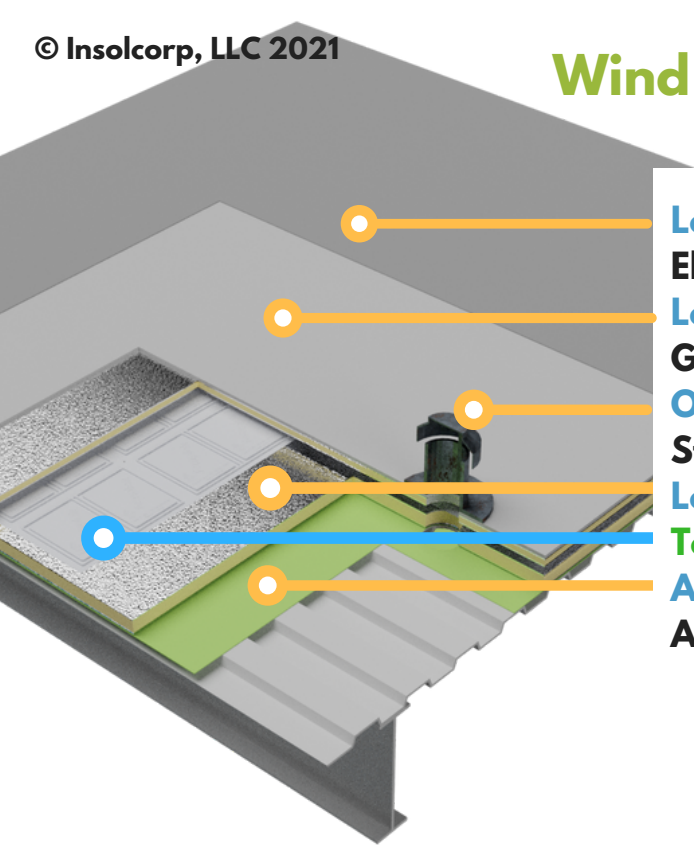
But a 78°F Phase Change Material (example) encapsulated within Templok™ tiles will begin to gel/melt once the roof exceeds 78°F. As it melts, it absorbs heat (the same way ice does inside a cooler) and essentially **STOPS** the rise in temperature during this time. Essentially maintaining 78°F to 82°F roof temps for hours.

Once fully melted some hours later, it then begins it's rise in temperature **SLOWER** and much **LATER** than without PCM. Peak roof temperatures are therefore drastically reduced. Leading to a high performance roof with much less insulation.

At night, it re-freezes as temps drop below 78°F and releases this heat back to the atmosphere.



Wind Vent System Components (Typical)



Loose Laid Waterproofing Membrane

Elvaloy KEE, PVC, TPO, EPDM, Modified Bitumen

Loose Laid Cover Board

Gypsum, Densdeck, Securock, Concrete Board

One Way Vortex Valves

Strategically place valves in the wind vortex position

Loose Laid Insulation

Templok™ Phase Change Material + Regular Insulation

Air Barrier Deck

Added Barrier, Steel, LWIC, Structural Concrete, Wood

One Way Vortex Valves



One way rugged spun aluminum
11" height, 5" diameter
No moving parts

Transfer uplift pressure (suction) from above the roof membrane to the underside of the membrane and to the structural air barrier substrate to offer the highest wind protection of any roofing system

These "One Way Vortex Valves" only allow air OUT of the roof. When installed at the perimeter of the roof, it takes advantage of the suction effect from wind uplift and effectively vacuum sucks the roof membrane down to the building in high winds! NO MORE SCREWS, NO MORE GLUES!!

Phase Change Material



THERMAL CAPACITY 100btu/sf

PHASE CHANGE MATERIAL Mineral Based/Inorganic

TEMPERATURES 65F(18), 69F(21C), 73F(23C), 78F(25C), 84F(29C)

LATENT HEAT 86 btu/lb

SPECIFIC HEAT 1.35 btu/lb

THERMAL CONDUCTIVITY ~0.16 W/ft/K Liquid, ~0.33 W/ft/K Solid

THICKNESS & WEIGHT 0.25" thick; 1.1 lbs/sf

FLAME SPREAD ASTM E84|UL723 - Class A

PERMEABILITY ASTM E96 - 0.08 (grains/hr*ft²inHg)



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Frequently Asked Questions:

The PCM Wind Vent Roofing system is a reliable roofing solution for ANY project. But, like all good solutions, there are conditions where it truly shines. Here are some frequently asked questions to help you identify if the system is a good solution to your roofing needs.

Can this system be an alternative for insulation shortages?

The PCM/Wind Vent solution may combine to provide an alternative to expensive and delayed insulation shortages on some projects. Specifically if your roof project is an existing roof that is deemed to be failed or end of life, or if it is a historical building - this solution may be ideal. The PCM Wind Vent system can salvage existing roofing, by treating the existing roof as an overlay condition. Even on a saturated/damaged roof with compromised components, the PCM/Wind vent system can dry out, salvage the existing R value and cover with limited insulation, phase change materials, decking board and the same 30 year membrane warranty to result in a high performance, unbeatable warranty roof. All at a fraction of the investment. For other roofs such as New Construction, talk with ERC/Insolcorp to learn how we can help.

What if my building is Mission Critical such as a data center?

Buildings with highly sensitive interiors such as data centers, health care/bio pharma can benefit from superior system warranties, but just as importantly reduce disturbance from having to remove/replace existing roof protections during roof replacements. Buildings with very stringent temperature requirements (such as ice rinks, cold storage buildings, conditioned warehousing) can benefit significantly from the benefits of PCM acting as a SHIELD against heat, reducing condensation or heat issues caused by high roof temperatures in summer and improving energy performance and comfort.

What About Historical Buildings & Buildings requiring significant R-Value increase:

Historical buildings are difficult and very expensive roof systems to bring up to modern standards. Often lacking R-value, substantial roof thickness is often needed in order to accommodate new layers of added insulation. This results in increased roof elevations, leading to high costs in flashing and parapet/coping costs to make room for additional roof thickness. The PCM/Wind Vent solution bypasses all this expensive work, delivering the same roof performance with just a few inches. And if the roof is leaking and failed, the wind vent system can dry out and salvage existing R-value. Leading to less landfill, less carbon footprint and higher long term thermal performance.

Existing Failed Roofs Requiring Tear-Off & Upgrades:

Existing Roofs with failures requiring complete tear-off are a headache and extremely expensive to address. Wind Vent Roofing is the only roof design which can dry out and salvage existing roofing. When combined with the PCM layer, this delivers superior energy performance to a complete removal and upgrade to energy code, without the HUGE expense. Many good quality roofing companies will want to avoid "overlay" conditions, and for good reason, as it rarely provides reliable and long term results. But the PCM/Wind Vent design delivers superior energy performance, superior system warranties and un-matched wind protection warranties.

What is the PCM made of? Is it Safe?

The Phase Change Material (PCM) contained within the Templok™ panels are 100% mineral based formulations containing naturally occurring minerals. They are non-flammable, made and sourced from within the USA. The product is Class A fire rated.

What about Roof Warranties?

ERC's Wind Vent Roofing Solution combined with PCM delivers superior roof warranties compared with some conventional roofs. Roof System warranties are the same as conventional roofing, with options for 30 year warranties. In addition however, ERC offers a Wind Protection Warranty that cannot be matched by any other roof system, with protection up to 120 mph.



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