

**GORE® Protective Vents**

Case History



# IMPACT OF PRESSURE CHANGES ON SEALED ENCLOSURES

*Together, improving life*



## Situation

As the technology of surfboard construction changes, so do the considerations for pressure equalization. The industry uses either hollow core composite boards or an expanded polystyrene (EPS) foam core. With these constructions, there is more open air volume than previous versions. With heat from the sun, the air expands and the resulting pressure build-up causes delamination of the epoxy skin to occur. In order for the surfboard to be fit for use, the integrity of epoxy skin must be maintained. In addition, surfboards are exposed to rugged environments including contact with:

- Sand, dirt and debris
- Water
- Prolonged exposure in the sun
- Rapid temperature changes
- Harsh weather conditions

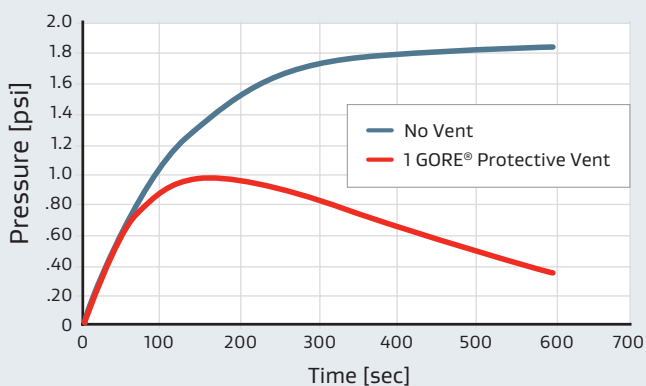


To view an online video from Infinity Surfboards, visit:

<http://www.youtube.com/watch?v=HzZcgVPx4hc>

## Why Vent?

Simply put, to maintain a high level of performance, a surfboard is a sealed enclosure that needs to maintain equalized pressure. GORE® Protective Vents provide the best solution for equalizing pressure in sealed enclosures and eliminating the vacuum that draws in water and other harmful contaminants. The unique characteristics of these vents respond to pressure change by allowing air to enter and exit the enclosure continuously, ultimately increasing longevity of the board. Some surfboard manufacturers have remedied this with a mechanical venting valve which the surfer must close when in the water and open when on land, leaving a large margin for user error. GORE® Protective Vents allow for zero maintenance because the vent is installed within the board. These vents comply with IP standards from IPX4 up to IP69K (high pressure, high temperature wash down applications). They also provide an effective barrier against harsh weather conditions (e.g., rain, high winds), while allowing water vapor to exit quickly.



Surfboard: Open Air Volume: 975 in<sup>3</sup>  
Pressure increase on board from 50 °F to 100 °F in 10 min.

## Vent to Protect

The graph depicts a theoretical model of pressure increase in a typical long board when it is taken from cold ocean water (~50 °F) and set on the sand in direct sunlight (~100 °F). The blue line shows the pressure increase that will occur in a sealed board with no vent, while the red line depicts the nominal pressure rise that will occur when a GORE® Protective Vent is incorporated into a sealed enclosure.



The pressure build-up on a non-vented surfboard causes delamination of the epoxy skin.

Below, GORE® Protective Vents allow for zero maintenance because the vent is installed within the board.



## A Surfboard is a Sealed Enclosure that Needs a Vent

Other common sealed enclosures include:

- LCD displays
- Rechargeable appliances
- Household appliances
- Lighting / LED applications
- Control units
- Sound transmission equipment
- Buoys
- Consumer audio and video devices
- Navigational devices
- Handheld communications systems
- Portable data devices
- Ruggedized electronic equipment

## Diverse Product Line Engineered for Simple Integration

GORE® Protective Vents are engineered solutions, tailored to the specific application in which they are used. Gore engineers will consult with you to understand your particular challenges and recommend the vent material, size, form and placement that will perform most effectively in your product.



## About Gore

W. L. Gore & Associates is a global materials science company dedicated to transforming industries and improving lives. Since 1958, Gore has solved complex technical challenges in demanding environments — from outer space to the world's highest peaks to the inner workings of the human body. With more than 11,000 Associates and a strong, team-oriented culture, Gore generates annual revenues of \$3.8 billion.

Gore develops products and technologies that address complex product and process challenges in a variety of markets and industries, including aerospace, automotive, pharmaceutical, mobile electronics and more. Through close collaboration with industry leaders across the globe, Gore enables customers to design their products and processes to be safer, cleaner, more productive, reliable, durable and efficient across a wide range of demanding environments.

Learn more at [gore.com/protectivevents](https://gore.com/protectivevents).



### FOR INDUSTRIAL USE ONLY. Not for use in food, drug, cosmetic or medical device manufacturing, processing, or packaging operations.

GORE® Protective Vent(s) are manufactured under the generic industrial ISO 9001 quality system. No other certifications can be provided by Gore for this GORE® Protective Vent. All technical information given is based on Gore's previous experiences and/or test results. Gore gives this information to the best of its knowledge, but assumes no legal responsibility. Customers are asked to check the suitability and usability in the specific application, since the performance of the product can only be judged when all necessary operating data are available. The above information is subject to change and is not to be used for specification purposes. Gore's terms and conditions of sale apply to the sale of the products by Gore..

INFINITY and designs are trademarks of Infinity Surfboard Company.

GORE, *Together, improving life* and designs are trademarks of W. L. Gore & Associates. © 2011–2023 W. L. Gore & Associates, Inc.

---

### INTERNATIONAL CONTACTS

**Australia** +61 2 9473 6800  
**Benelux** +49 89 4612 2211  
**China** +86 21 5172 8299  
**France** +33 1 5695 6565  
**Germany** +49 89 4612 2211  
**India** +91 22 6768 7000

**Italy** +39 045 6209 240  
**Japan** +81 3 6746 2570  
**Korea** +82 2 393 3411  
**Mexico** +52 81 8288 1281  
**Scandinavia** +46 31 706 7800  
**Singapore** +65 6733 2882

**South America** +55 11 5502 7800  
**Spain** +34 93 480 6900  
**Taiwan** +886 2 2173 7799  
**United Kingdom** +44 1506 460123  
**USA** +1 410 506 7812

**W. L. Gore & Associates, GmbH**  
Hermann-Oberth-Str. 26, 85640 Putzbrunn, Germany  
T +49 89 4612 2211 F +49 89 4612 2302 E [protectivevents@wlgore.com](mailto:protectivevents@wlgore.com)  
[gore.com/protectivevents](https://gore.com/protectivevents)

