

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

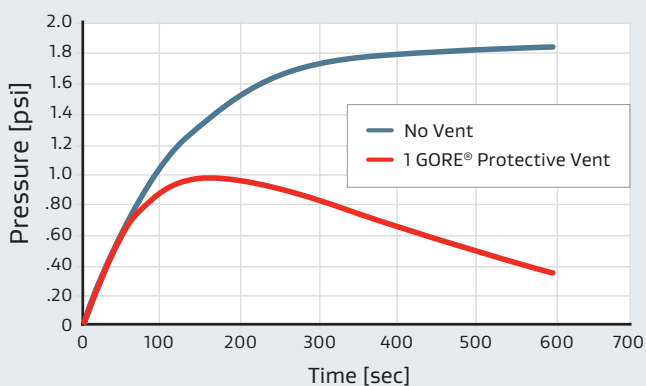


To view an online video from Infinity Surfboards, visit:

<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 in³
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.



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