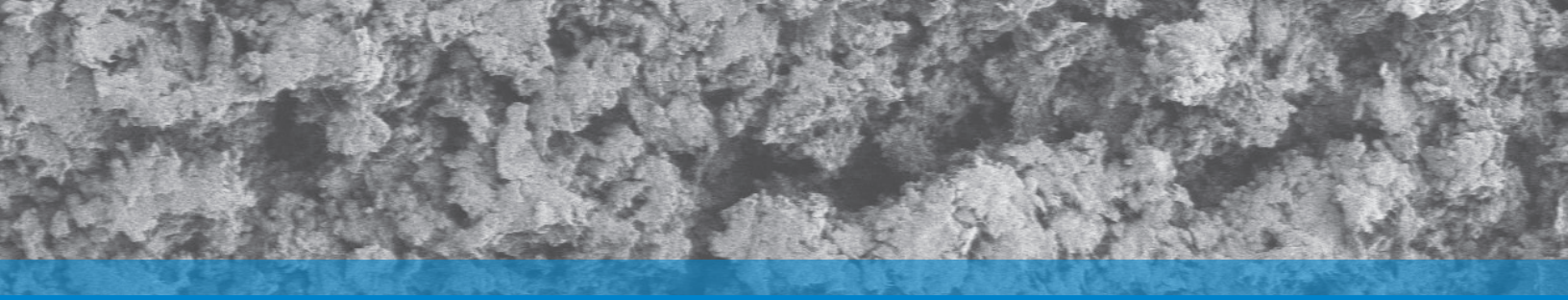
YOUR MEMBRANE PARTNER FOR EV VENTING APPLICATIONS

Global Leader in Sintered Porous Materials
POREX Virtek® PTFE

POREX
Filtration Group®



Your Membrane Partner for EV Venting Applications

When it comes to advanced porous components for automotive venting applications, POREX Virtek® PTFE Hydrophobic & Oleophobic membranes continues to be the material OEMs rely on.

Why Choose Us?

An IP-Rated Protection Vent made from sintered PTFE gives the highest thermal, chemical, and mechanical properties over any other membrane. It is manufactured in a way to be so robust it withstands the life of the vehicle.

Key Material Functionality

- Acts as an enclosure for pressure equalization
- Barrier from unwanted liquids & particulates
- Depth of media withstands moisture ingress
- Robust membrane resists damage from road impacts like rock and debris

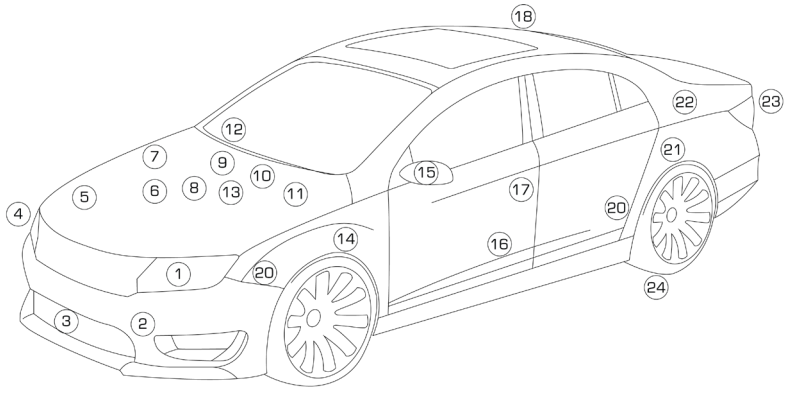
POREX Virtek® PTFE Membrane Technology:

Key Material Overview

- Pure sintered PTFE with no additives or supportive layers
- Robust high density porous structure with tight specification tolerances
- Highest thermally stable polymer option at extreme temperatures (500°F / 260°C continuous)
- Highest chemically inert material option for aggressive chemicals and acids
- Easy to handle and wide variety of options for high speed assembly
- PFOA Free & Compliant with (EC) 1907/2006 REACH / Regulation (EU) 2019/1021 POP

Common Applications

1. Headlamp Vents
2. Sensor Components
3. Horn Vents
4. Signal Lamp Vents
5. Steering System Vents
6. Battery Storage Vents
7. Air Circulation Filters
8. Oil Micro Filter
9. Fluid System Cap Vents & Filters
10. ECU & Electronics Protection Vents
11. Battery Vents
12. Windscreen Wiper Vents
13. Hydraulic System Vents & Filters
14. Actuator Vents
15. Collision Avoidance Components



16. Electric Motor Vents
17. Key FOB Vents
18. Audio System Vents
19. Gearbox Vents
20. Battery Pack Vents
21. Tail Lamp Vents
22. Tire Pressure Sensors

Solving Complex Battery and Thermal Management Challenges

Our high-performance POREX Virtek IP-Rated PTFE vents are designed to provide controlled airflow venting, with advanced features.

Hot Topic: The Race to Thermal Stability

Thermal energy management in EVs is key to optimal battery performance. As battery technology progressively become more powerful, so do they create more heat – and the need for pressure management for thermal stability increases.

IP Rated Protection Vents for Everyday Challenges

Passive venting for any automotive component that has the challenge of withstanding extremities of design.

Key Benefits

- Filtration efficient membrane traps contaminants from entering inside components
- Hydrophobic & Oleophobic for complete compatibility to any liquid contact
- Airflow efficient for any altitude or pressure conditions

IP Rated Protection Vents for Extreme Thermal Cycling

Passive venting and pressure equalization to protect electronic enclosures from pressure spikes, caused by rapid temperature changes.

Key Benefits

- Membranes with low coefficient of thermal expansion (CTE), ensuring seal remains intact
- Withstands extreme temperatures in demanding environments ranging -200°C to 260°C
- Longer battery life cycles can be achieved with control to temperature and pressure changes

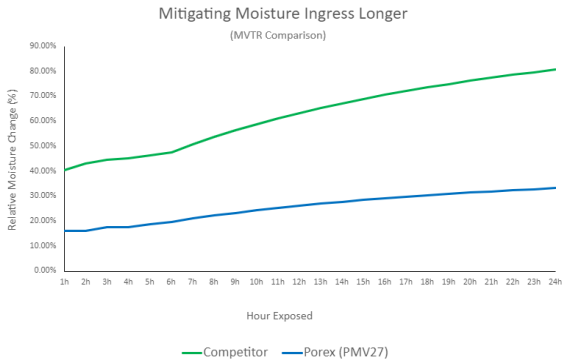
IP Rated Protection Vents for Moisture & Humidity Control

Any semi-permeable membrane will allow airflow of interior systems, yet they often cannot withstand moisture build up of hygroscopic components.

Sintered membranes helps to reduce condensation and moisture ingress. It protects against corrosion and short circuiting of electrical and thermal components that endanger safety and functioning of the vehicle

Key Benefits

- Hydrophobic PTFE low surface energy helps to repel water to mitigate damage
- Allows pressure change and degassing to occur
- Limits water ingress longer than other common expanded PTFE materials.



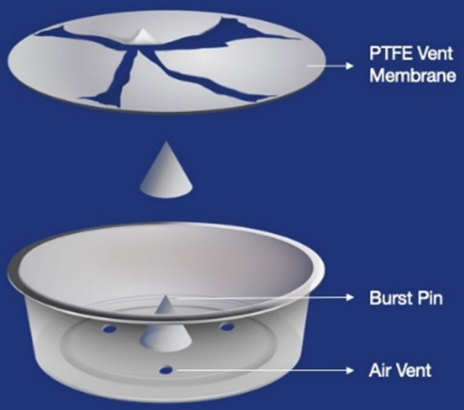
A Membrane That Improves Battery System Safety

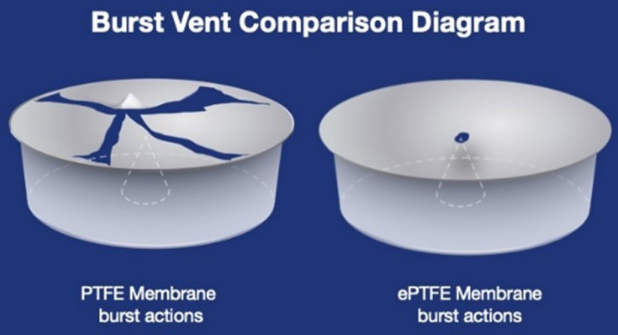
Dual-Stage Battery Safety Vents Without Need for Burst Pins

Customized emergency safety battery venting PTFE membranes. A fast release solution for thermal runaway and off-gassing. Dual stage vent materials allow both passive air venting and burst action in one:

- Burst Vent: A dramatic rupture under stress without need for pins, saving space in installation design
- Passive Vent:Prevent contamination inside of packs that can affect performance & place stress on charging
- Overall, thermally stable at extreme temperatures, does not change dimensionally when hot/cold

The Science Behind It: POREX Virtek® PTFE in EV Battery Burst Vents





Burst action with sintered PTFE membranes is a complete rupture due to inherent structure of the material, giving it the fastest rapid thermal runaway.

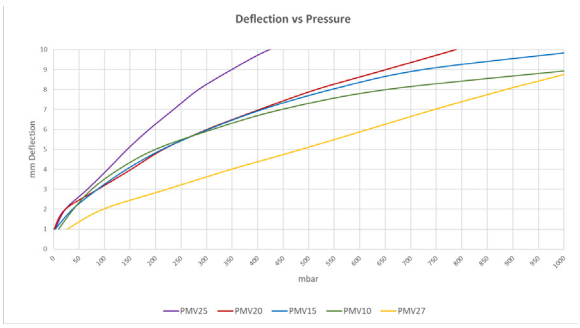
Unlike expanded PTFEs or other porous materials, which are elastic in structure and only create small burst holes.

Will work with or without burst pin, depending on design choice.

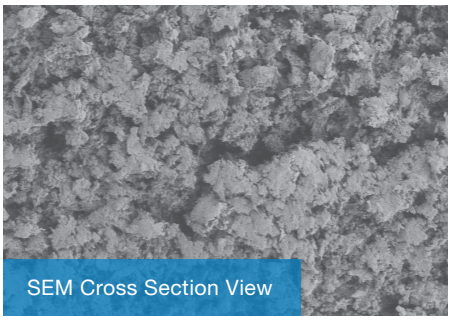
Sintered PTFE has minimal flex fatigue under thermal cycling

Material Selection Guide

Find a wide variety of airflow and thickness materials to customize your burst vent design using these specifications.



Hydrophobic & Oleophobic Membranes for All Critical Automotive Components



SEM Cross Section View

Vent & Filter

Exchange of air, fumes, gasses, or water vapor whilst acting as a water, fluid, and particulate barrier.

Hot Topic: Oil Mist Challenges

Aerosolized particles containing tiny oil droplets causes issues to electronic an drive-train components, a main concern of unwanted contaminants. It can stem from oils found in transmission fluids and coolants used in thermal management systems.

Venting components are more likely to be clogged by oil mist than any other particulate matter.

Where Venting Matters

01
Drive Train Components

A robust membrane that mitigates dust and debris contamination, prevents water intrusion, yet will not clog from dust.

02
Moisture Malfunctioning Components

Permeable membranes that release unwanted moisture that enters through openings.

03
Fluid Systems

Hydrophobic or Oleophobic membrans that repel or maintain liquids inside.

04
Electronic & Sensors

Protection for sensitive eletronics to maintain thier performance.

05
Thermal Management Components

Heat and pressure equalization venting with a strong weld you can rely on.

Assembly Options

- Thermal & Ultrasonic Welding
- Overmolding
- Snap-Fit
- Press Fit
- Pressure Sensitive Adhesive

*Various conversion options available

Porex Virtek® PTFE - General Automotive Hydrophobic Membranes

Item Number	IP Rating †	Water Entry Pressure (mbar)	Typical Airflow (l/hr/cm² @70mbar)	Filtration Efficiency** >99.99%	Thickness (mm)	Max Operating Temp °C	Salt Fog$
PMV10	64,67	270	107	0.5µ	0.13	260	No Pen.
PMV10L***	64,67	270	85	0.5µ	0.3	100	No Pen.
PMV15	64,67	370	75	0.4µ	0.18	260	No Pen.
PMV15T‡	64,67	370	75	0.4µ	0.18	260	No Pen.
PMV20	64,65,68	520	25	0.1µ	0.25	260	No Pen.
PMV25	65,67,68	765	17	0.2µ	0.1	260	No Pen.
PMV27	65,66,67,68	1050	7	0.1µ	0.19	260	No Pen.

Porex Virtek® PTFE - Automotive Oleophobic Membranes

Item Number	IP Rating †	Water Entry Pressure (mbar)	Typical Airflow (l/hr/cm² @70mbar)	Filtration Efficiency** >99.99%	Thickness (mm)	Max Operating Temp °C	Salt Fog$
PMA10‡	64,67	370	75	0.4 µ	0.18	260	No pen.
PMA15‡	65,67,68	520	25	0.1 µ	0.25	260	No pen.
PMA20‡	65,66,67,68	1050	7	0.1 µ	0.19	260	No pen.

† IEC std. 60529; IP68 is a user defined, results must be verified by the user.
*WEP Typical value
** According to IEST RP-CC007.2 2009
$ASTM B117-11 test method

***Laminated polyolefin mesh backing
‡ Oleophobic, AATCC TM 118 – Grade 8

Properties are typical and not meant for specifications. Selected options and adhesives may affect properties

RoHS, WEEE, REACH Compliant (PFOA Free)

CONTACT US

Website: www.porex.com
Email: info.porex@filtrationgroup.com

POREX Filtration Group®