



Nano Vents

**Vapour permeable
venting & protective barriers**

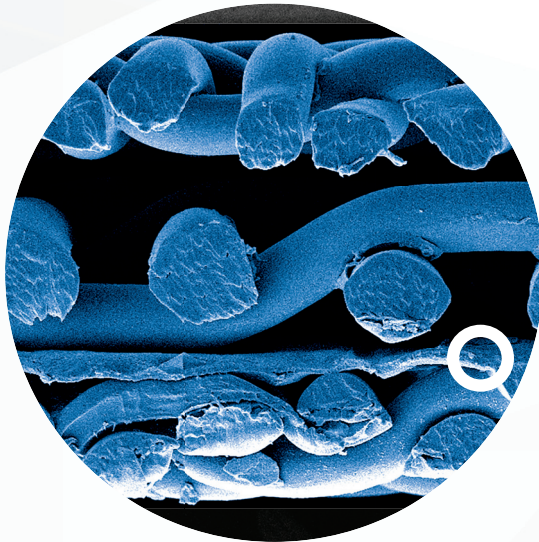
**Game changer
PFAS-Free Vents for future**





Nanomembrane

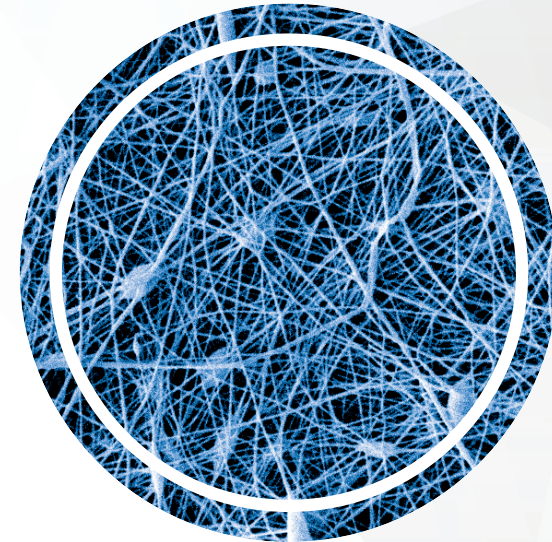
Nanomembranes are ultrathin layers composed of nanofibers (1–1000 nm) arranged in multiple layers. Using organic polymer material composition, they offer high breathability, moisture vapour permeability, ingress protection, and filtration efficiency, which we leverage to achieve the required properties.



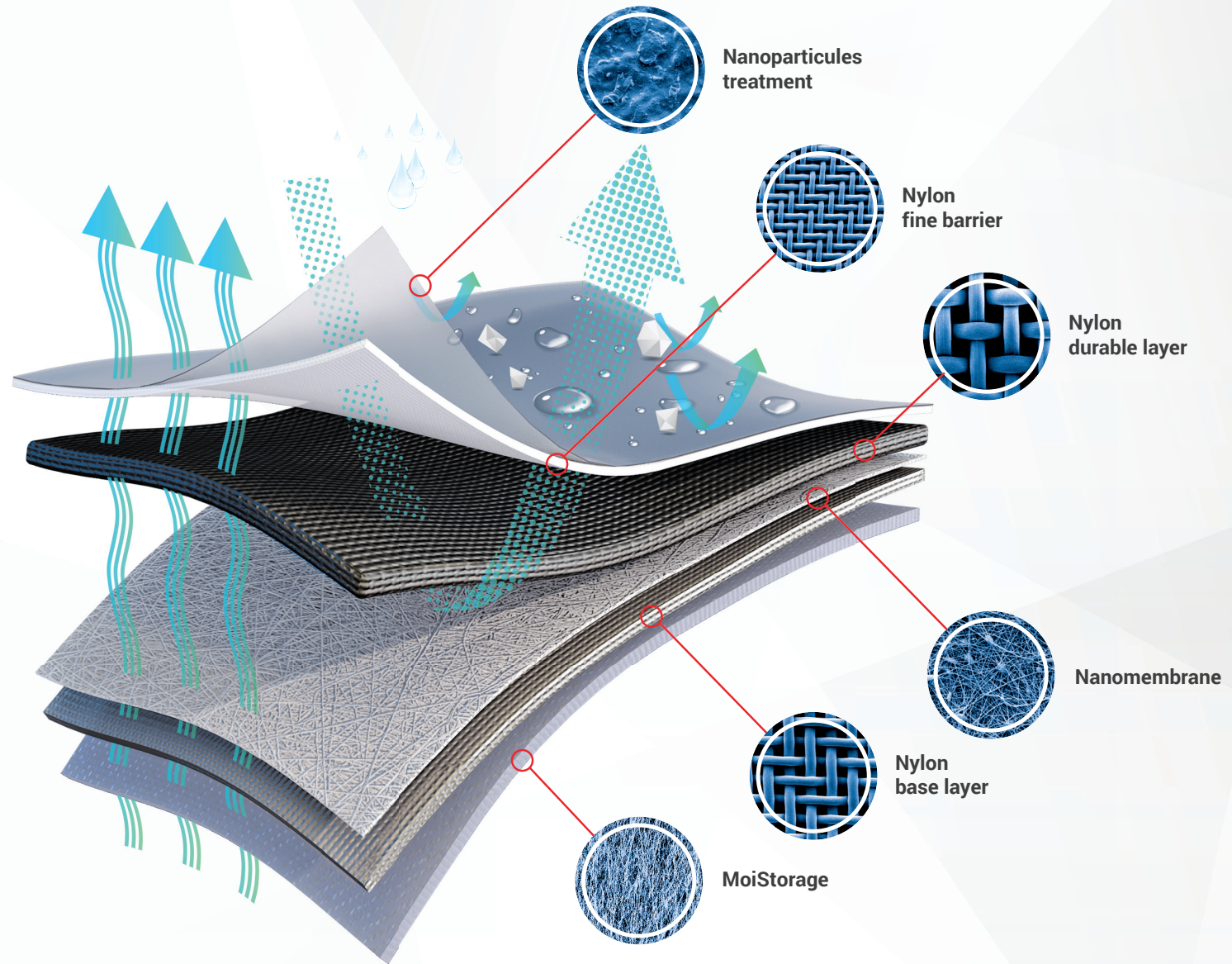
Q 500x



Q 1 000x

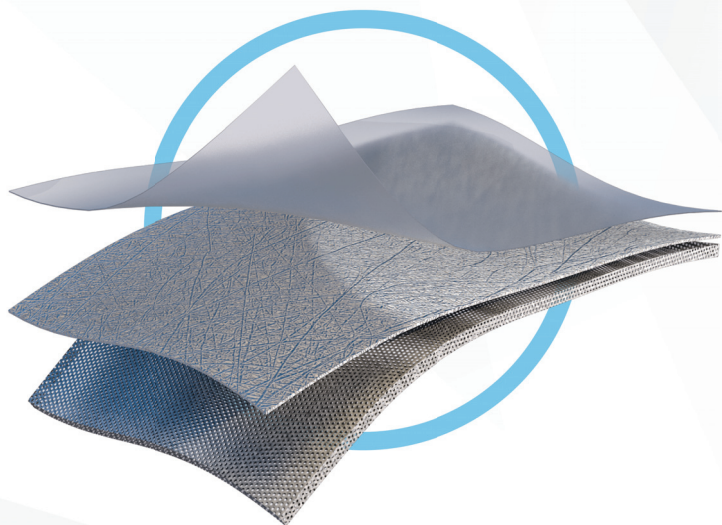


Q 5 000x



ZeroPF = 100% free
of PFAS/PFOA/PTFE

Multilayer
adjustable solution



AV Advanced Venting 2D

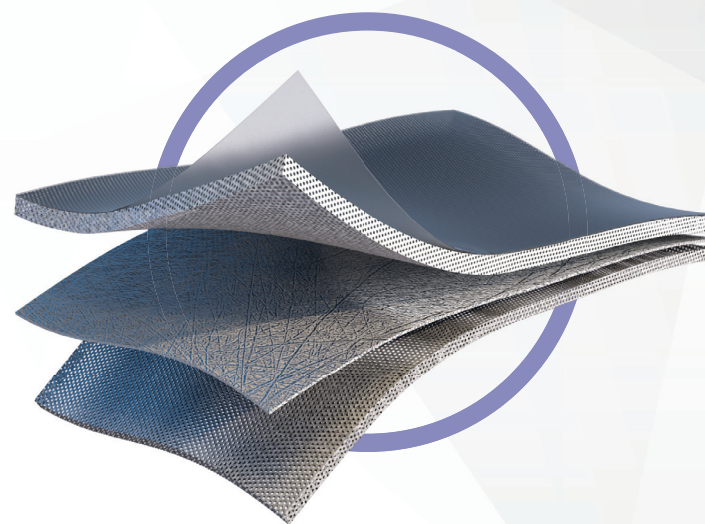
Designed for open lighting systems with maximum air circulation and excellent moisture vapor permeability, with very good resistance to dust, splash water, and automotive fluids.

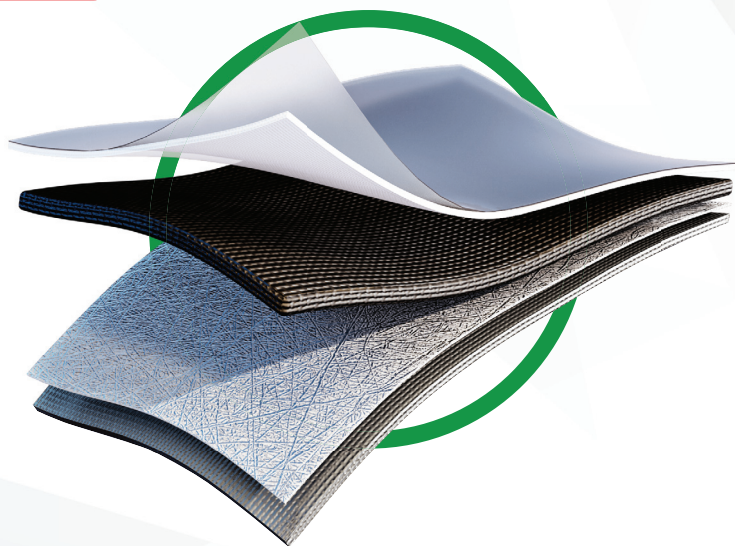
Appl: headlamps (HL), acoustic vents, interior, electronics.

PV Permeable Venting 3D

Optimized for closed lighting systems where condensation is a key concern. Offers strong airflow, effective water vapor transfer, and superb water entry pressure (WEP) resistance – a cost-saving solution for applications with limited direct exposure. Protected by NanoComposite coating.

Appl: headlamps (HL), rear lamps (RL), accessory.





APVM Advanced Permeable Venting MoiStorage 5D

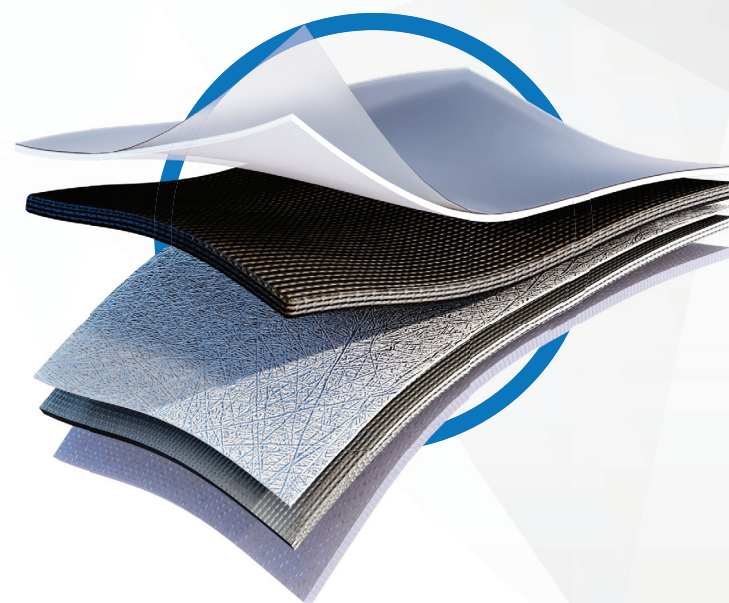
The extended desiccating version of the APV series, equipped with an internal superabsorbent MoiStorage layer. MoiStorage layer captures moisture at the vent area and facilitates its immediate release when the housing reheats and the partial pressure of water vapor increases.

Appl: headlamps (HL), rear lamps (RL).

APV Advanced Permeable Venting 4D

Enhanced protection for demanding closed-system applications. Provides higher WEP performance while maintaining excellent vapor permeability and airflow, an uncompromising option for exposed or high-value components.

Appl: headlamps (HL), rear lamps (RL), Electronic Control Unit (ECU).

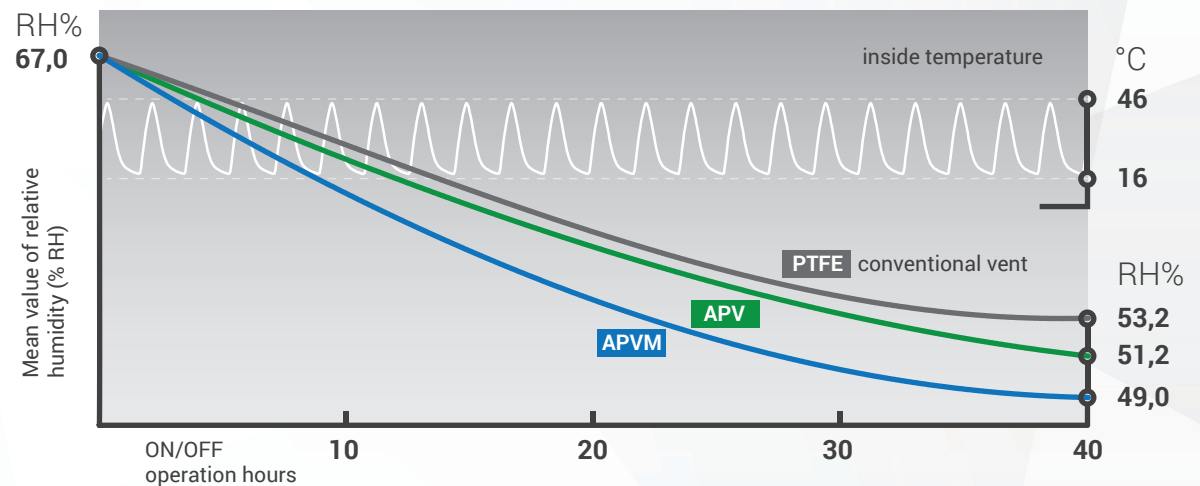




TYPE	MULTI-LAYER COMPOSITION	FILTRATION EFFICIENCY 99%	HYDROSTATIC RESISTANCE	WEP	MVTR OUT	RET	AIRFLOW 2 mBar	AIRFLOW 70 mBar
AV	2 layers	0.3 μm	0 - 1.5k mm	20 - 150 mBar	> 40k $\text{g}/\text{m}^2/24\text{h}$	0.6 - 2 $\text{Pa}\cdot\text{m}^2/\text{W}$	10 - 230 $\text{L}/\text{s}/\text{m}^2$	300 - 6 500 $\text{L}/\text{s}/\text{m}^2$
PV	3 layers	0.3 μm	2k - 5k mm	195 - 490 mBar	> 20k $\text{g}/\text{m}^2/24\text{h}$	2.1 - 3.5 $\text{Pa}\cdot\text{m}^2/\text{W}$	> 5.4 $\text{L}/\text{s}/\text{m}^2$	> 197 $\text{L}/\text{s}/\text{m}^2$
APV	4 layers	0.1 μm	4k - 10k mm	390 - 980 mBar	14k - 25k $\text{g}/\text{m}^2/24\text{h}$	2.3 - 4.9 $\text{Pa}\cdot\text{m}^2/\text{W}$	2.0 - 9.6 $\text{L}/\text{s}/\text{m}^2$	78 - 371 $\text{L}/\text{s}/\text{m}^2$
APVM	5 layers	0.1 μm	4k - 10k mm	390 - 980 mBar	14k - 25k $\text{g}/\text{m}^2/24\text{h}$	2.3 - 4.9 $\text{Pa}\cdot\text{m}^2/\text{W}$	1.6 - 8.4 $\text{L}/\text{s}/\text{m}^2$	62 - 326 $\text{L}/\text{s}/\text{m}^2$

40-Hour Headlamp Moisture Reduction Lab Test

The NanoVents solutions provide effective moisture reduction and pressure equalization management in a temperature range of -40°C to $+120^{\circ}\text{C}$, along with exceptional protection against ingress under all conceivable outdoor operating conditions worldwide.



Nanoparticules treatment hydro - oleophobic treatment certified: grade 6	ISO 14419
Chemical resistance	ISO 16750-5, LV124, §5.1.
Performance values of our membranes are tested and verified according to international standards	ISO 9237, ISO 11092, ISO 811



ZeroPF means that NanoVents products do not contain any harmful per- and polyfluoroalkyl substances, not manufactured with them and is fully compliant with EU REACH and upcoming US EPA PFAS regulations (effective 2026).

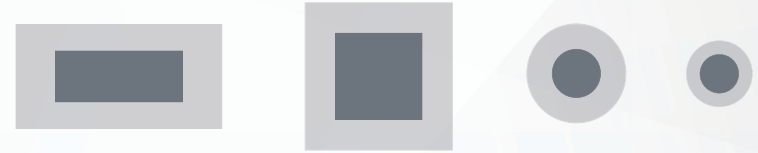


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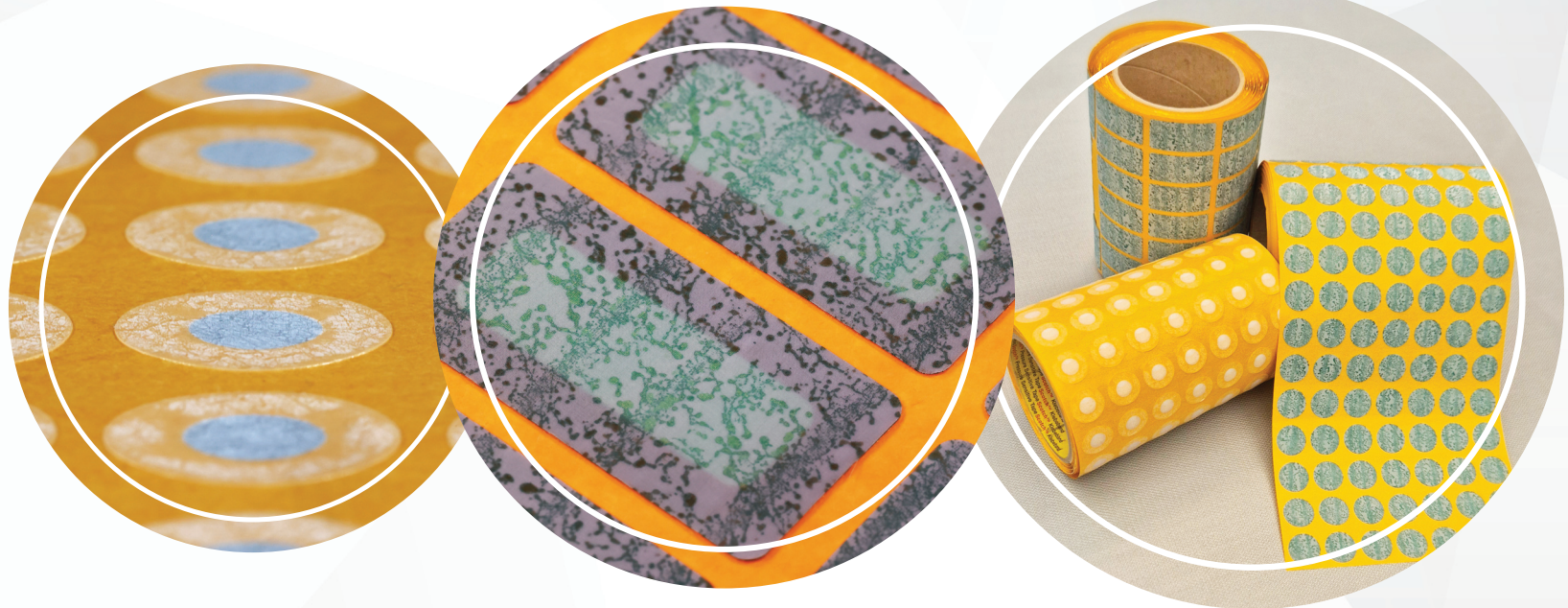
NanoVents' patented nanomembrane-based solutions provide effective vapor permeability, ventilation, pressure equalization, and long-term ingress protection, all without the use of per fluoropolymer compounds, either in the final product or during manufacturing. ZeroPF technology meets the highest standards of safety and sustainability.



Application



Ultrasonic welding	elements on low tack carrier for pick and place application
Lifelong Double side adhesives	single line / multi up liner / belt on reels on easy releasing liner / belt





NanoVents

Manufactured by:

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Do you have technical questions,
condensation issues, or need
a customized solution?
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Adoz.

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