



# SAATlvent

PFAS-Free Venting Membrane For Pressure Equalization, Moisture Control, and Contaminant Protection

FOR THE MANY, BY THE FEW

—SAATI

# PFAS-Free Priority

For People and Planet

In response to increasing environmental and regulatory demands, SAATI has developed a full range of venting membranes that combine technical performance with responsible material choices.

All **SAATivent®** membranes are completely PFAS-free.\*

Per- and polyfluoroalkyl substances (PFAS) are widely used in traditional membrane technologies for their water-repellent properties. However, their persistence in the environment and potential health impacts have led to growing regulatory restrictions worldwide. By eliminating PFAS from its membranes, SAATI offers a safer, more **sustainable alternative**, without sacrificing reliability or protection.

## Safe Materials, Safer Manufacturing

SAATivent membranes are made using selected polymers and solvents that minimize environmental and health risks. From formulation to final product, the entire process is designed to reduce hazardous emissions, ensure operator safety during production, and support safer handling by customers and end users.

For engineers and product developers, this means one fewer trade-off: high-performance membrane solution that aligns with **sustainability goals** and **regulatory compliance** — today and tomorrow.

## Highlights

- **PFAS-free across all membrane types**
- Use of low-impact raw materials and solvents
- Safer for operators, assemblers, and end users
- Aligned with RoHS, REACH and upcoming global restrictions

\* PFAS FREE means no PFAS substances are intentionally added or declared in its components. However, trace amounts may be present due to unintentional contamination or background environment exposure.

# Contents



Click a page number to visit the section.

To return click the house icon at the bottom of pages.



|                                        |                    |
|----------------------------------------|--------------------|
| <a href="#">SAATI Venting Membrane</a> | <a href="#">02</a> |
| <a href="#">SAATlvent Line</a>         | <a href="#">06</a> |
| <a href="#">SAATlvent NM Series</a>    | <a href="#">08</a> |
| <a href="#">SAATlvent PR Series</a>    | <a href="#">10</a> |
| <a href="#">SAATlvent M Series</a>     | <a href="#">12</a> |
| <a href="#">SAATlvent APR Series</a>   | <a href="#">14</a> |

|                                           |                    |
|-------------------------------------------|--------------------|
| <a href="#">Testing &amp; Validation</a>  | <a href="#">16</a> |
| <a href="#">R&amp;D Capabilities</a>      | <a href="#">18</a> |
| <a href="#">Contact SAATI</a>             | <a href="#">20</a> |
| <a href="#">Company Info</a>              | <a href="#">22</a> |
| <a href="#">Interactive Product Index</a> | <a href="#">24</a> |
| <a href="#">Technical Data Disclaimer</a> | <a href="#">25</a> |

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FOR THE MANY, BY THE FEW

# Why Venting Membranes Matter

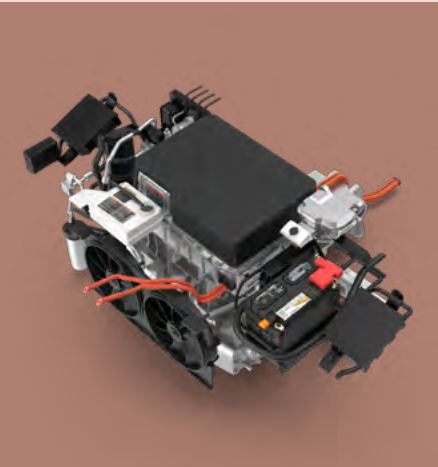
Critical Protection for Sensitive Electronics

SAATI's expertise in technical fabrics for filtration has laid the foundation for the development of membrane technologies. This evolution responds to specific application needs where woven materials reach their limits, such as finer pore control, barrier performance, and integration into sealed devices.

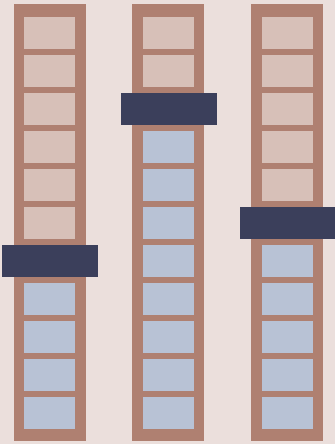
**Venting membranes** complement SAATI's portfolio by extending its core competencies into new formats and performance levels. Fully integrated into existing production processes, they offer reliable, scalable solutions for modern electronic and industrial applications.

Designed to allow air exchange while blocking water, dust, and particles, they are vital for:

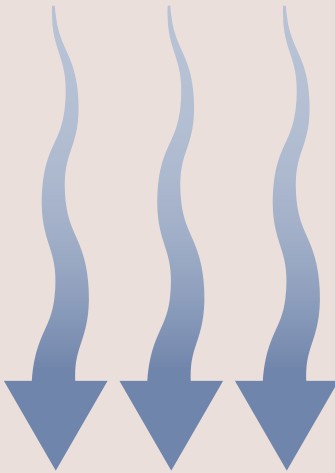
- **Automotive electronics** (sensors, ECUs, lighting systems)
- **Consumer electronics** (smartphones, speakers, wearables)
- **Industrial enclosures** (power systems, packaging)



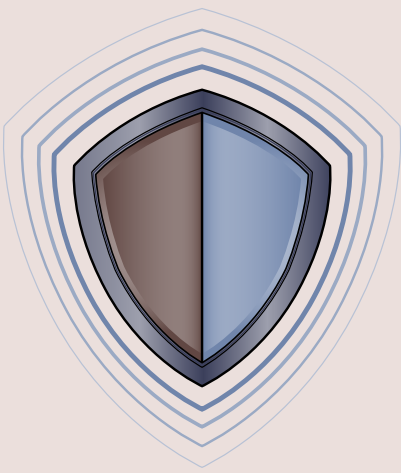
# Key Functional Benefits



**Pressure Equalization:**  
Compensates for pressure changes caused by temperature shifts or altitude



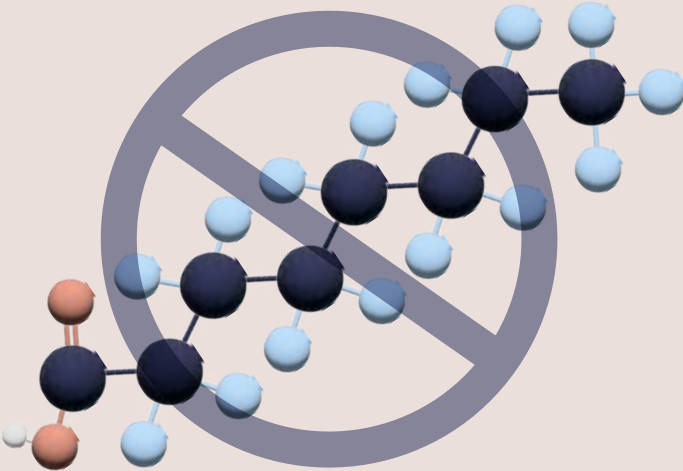
**Condensation Prevention:**  
Prevents internal condensation that could corrode or short sensitive components



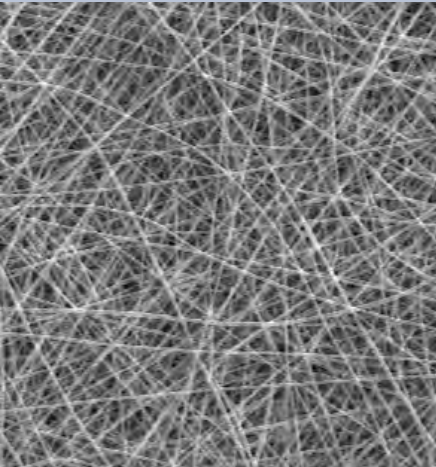
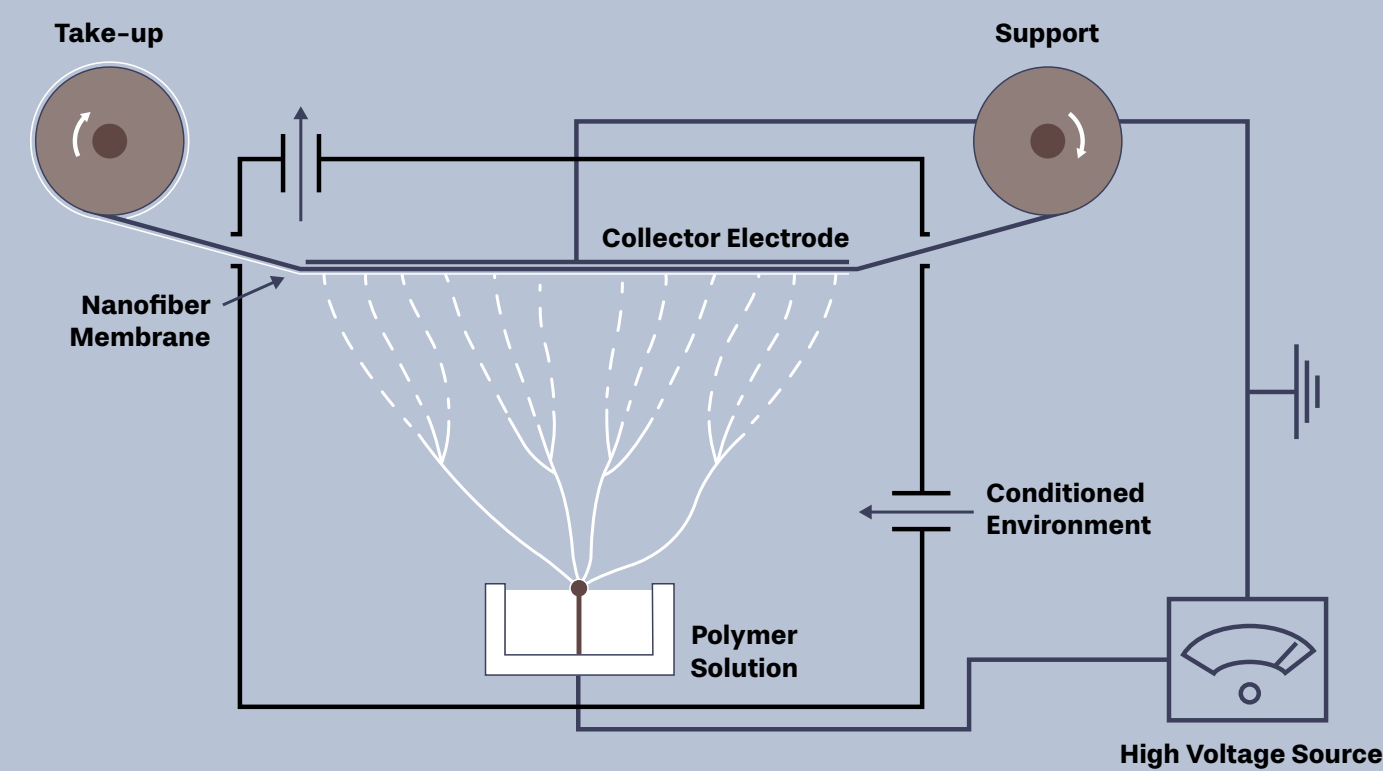
**Contaminant Protection:**  
Repels water, fluids, dirt, and fine particulates

## PFAS-Free

All SAATivent solutions are manufactured PFAS-free and tailored for durability, acoustic performance, and environmental resilience.



# Electrospinning

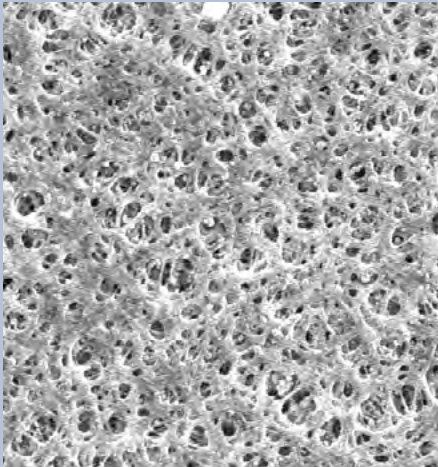
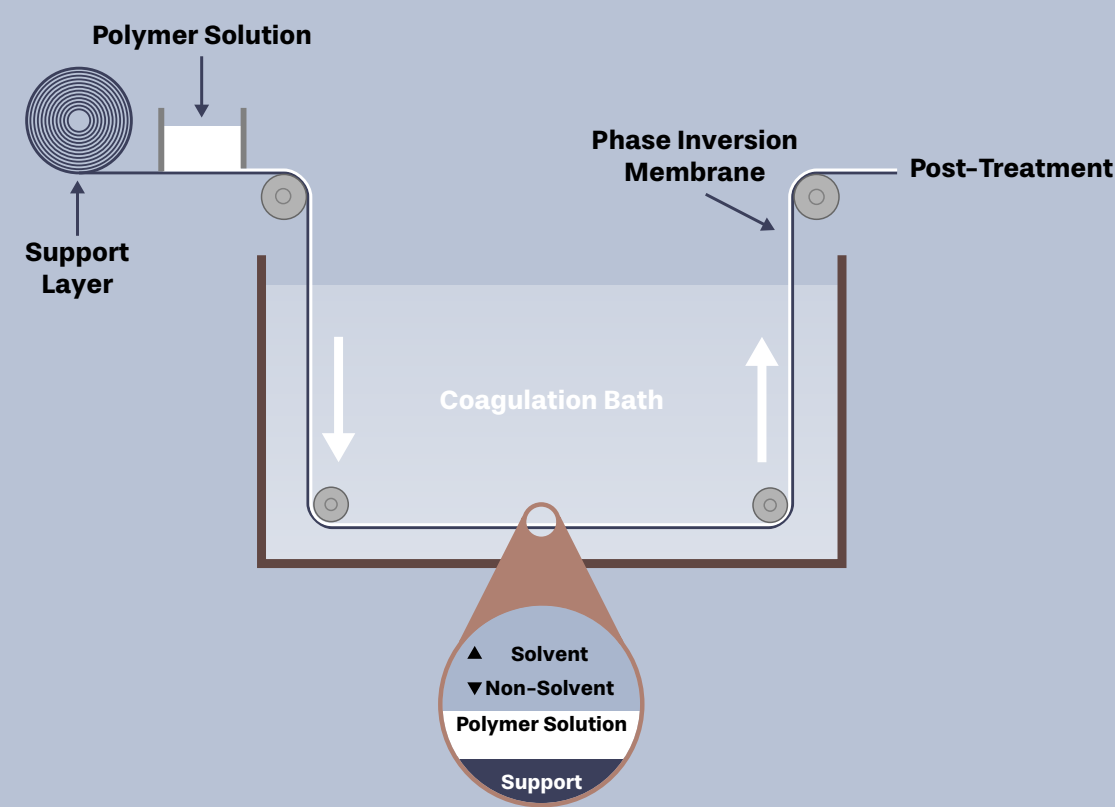


Electrospinning is a process where a polymer solution is exposed to a high-voltage electric field, producing ultra-fine fibers that are deposited onto a carrier. As the fibers accumulate, they form a self-standing, breathable membrane.

The result is a uniform structure with:

- **High porosity** and **breathability**
- **Tunable pore size distribution**
- Excellent **acoustic properties**

# Phase Inversion



Phase inversion is a process where a polymer solution is cast as a thin film onto a support and then exposed to a non-solvent, triggering a controlled transformation into a solid but porous structure.

The result is a composite membrane with:

- **Tighter structure** with excellent liquid repellency
- **Greater mechanical strength**
- **Controlled pore morphology**

S A A T I V E N T

**Four lines.  
One brand.  
No limits.**

# SAATIvent NM Series

Designed for acoustic applications in consumer electronics, combining optimal sound transmission with robust environmental protection.

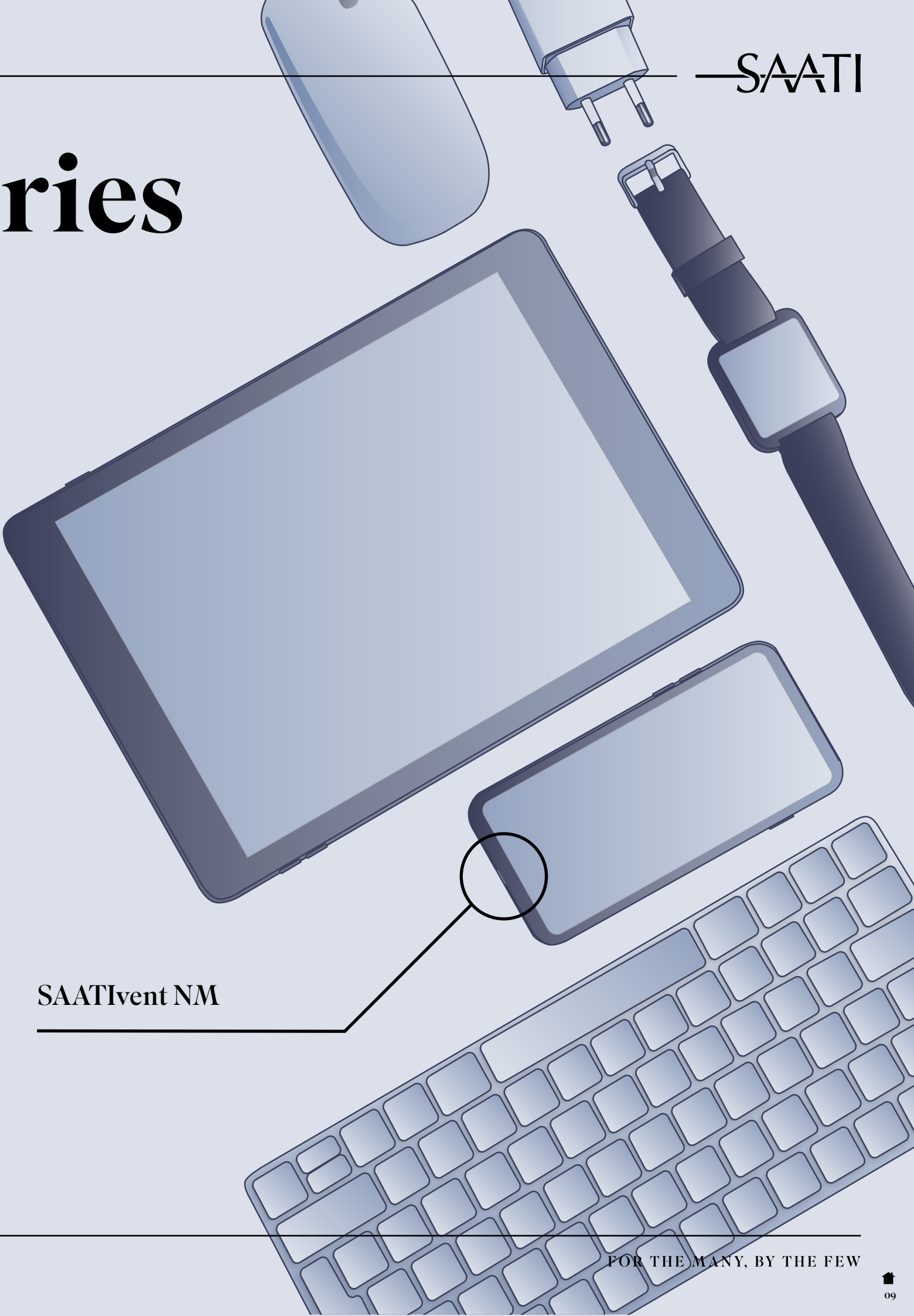
Engineered for microphones and other audio devices, these membranes offer **minimal acoustic loss** while ensuring reliable **IP67/IP68 protection**.

## Key Benefits

- Superior Acoustic Transparency
- Reliable Environmental Protection
- Optimized for Compact Designs
- PFAS-Free Sustainable Solution
- Efficient Manufacturing Integration

| SAATIvent NM Series                       |            |            |            |
|-------------------------------------------|------------|------------|------------|
| Product                                   | NM2300UBHF | NM2700UBHF | NM3800UBHF |
| Air Permeability<br>mL/cm²min [@ 70 mbar] | 2020       | 3150       | 6300       |
| dB Loss up to 10KHz*                      | ≤1.5       | ≤1.0       | ≤0.5       |
| Thickness (µm)                            | 12         | 9          | 3          |
| Hydrophobic                               | YES        | YES        | YES        |
| Part Level IP Rating                      | IP67/IP68  |            |            |

\*Part size 1.6 x 1.6mm



# SAATlvent PR Series

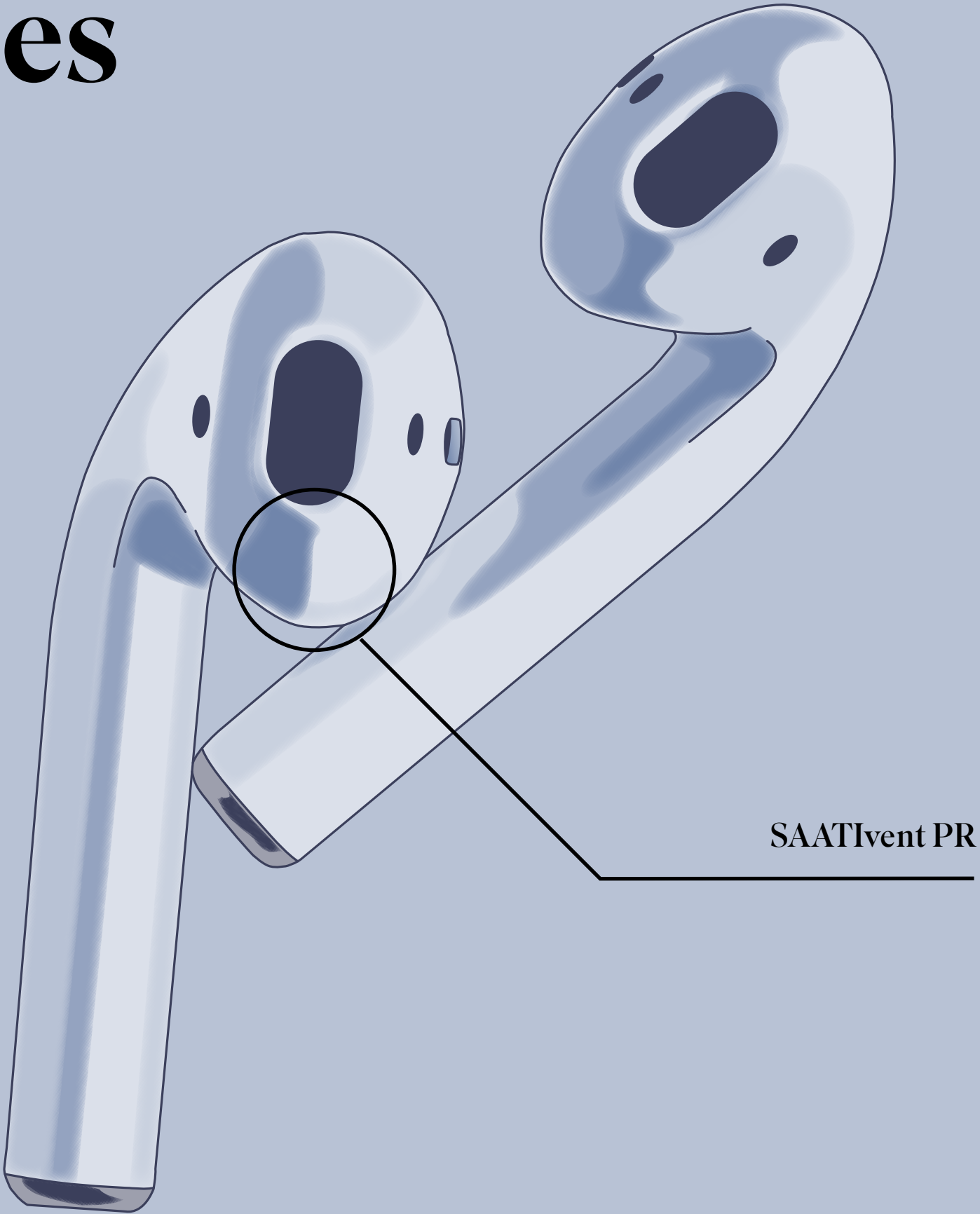
Designed for pressure equalization in compact consumer electronics, combining airflow efficiency with robust environmental protection.

Ideal for components inside smartphones, smartwatches and portable devices, SAATlvent PR membranes ensure consistent **venting performance** by balancing internal pressure while blocking water, dust, and particles — all in a formulation that is PFAS-free. Additionally, they are suitable for **speaker back venting** applications, providing effective pressure equalization and environmental protection

## Key Benefits

- Effective pressure equalization
- IP-grade barrier to fluids and particulates
- Designed for compact electronic enclosures
- PFAS-free and environmentally conscious
- Seamless integration into automated processes

| SAATlvent PR Series                    |           |
|----------------------------------------|-----------|
| Product                                | PR04HF    |
| Air Permeability mL/cm²min (@ 70 mbar) | 400       |
| Thickness (µm)                         | 90        |
| Hydrophobic                            | YES       |
| Part Level IP Rating                   | IP67/IP68 |



# SAATlvent M Series

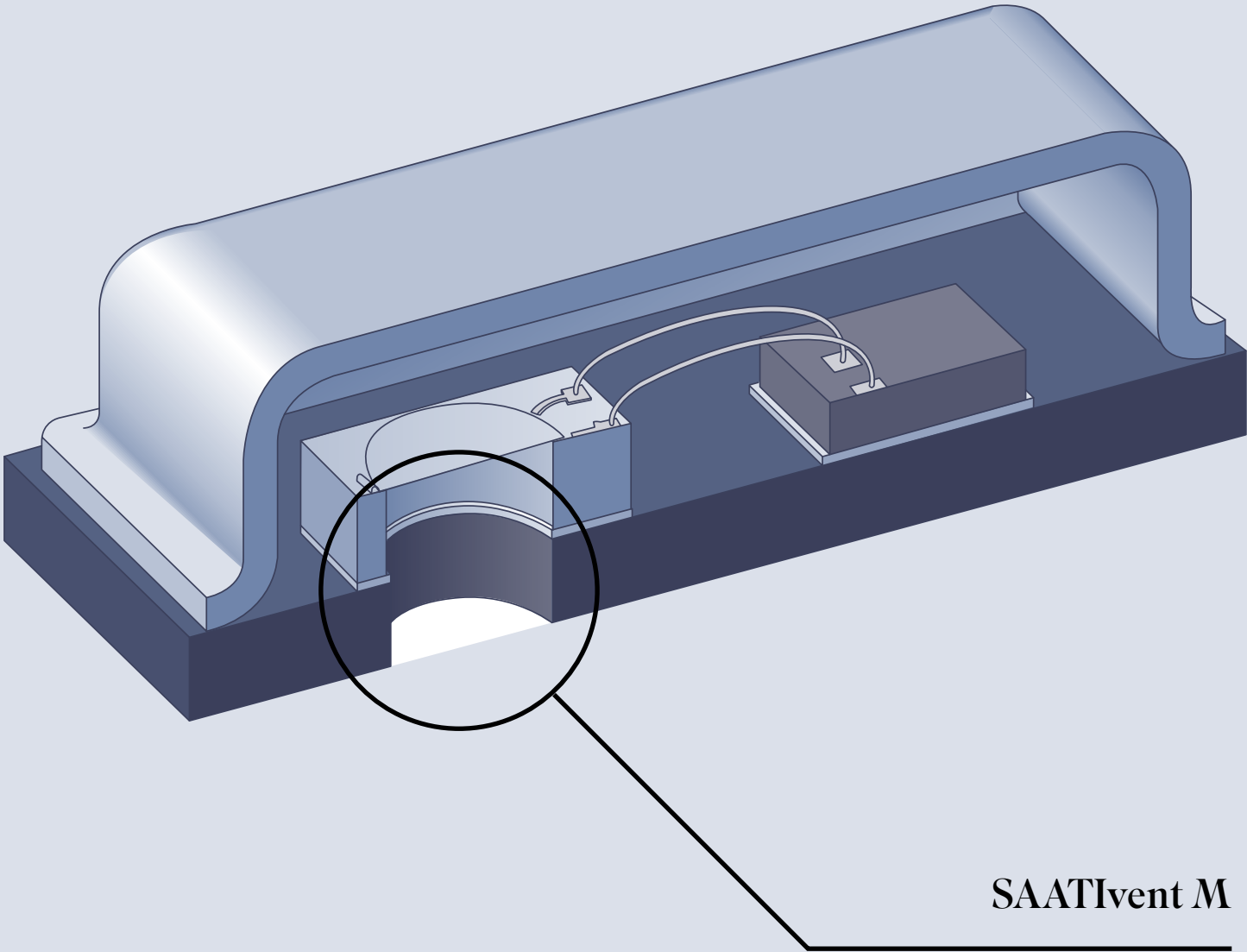
Designed for MEMS microphones and sensors, offering durable protection in high-precision electronic and automotive applications.

SAATlvent M membranes shield sensitive components from dust, moisture, and thermal stress, ensuring long-term reliability in demanding environments such as automotive systems and advanced electronics. It withstands JEDEC reflow cycles and extreme operating conditions, ensuring durability throughout manufacturing process.

## Key Benefits

- Reliable barrier against contaminants
- Resistant to high operating temperatures
- Simplified integration into sensor housings
- Optimized for automotive and industrial-grade electronics
- PFAS-free

| SAATlvent M Series                     |            |
|----------------------------------------|------------|
| Product                                | M05HF      |
| Air Permeability mL/cm²min [@ 70 mbar] | 400        |
| Thickness (µm)                         | 80         |
| JEDEC Reflow Profile                   | Compatible |
| Hydrophobic                            | YES        |
| Part Level IP Rating                   | IP67/IP68  |



# SAATlvent APR Series

Engineered for advanced industrial & automotive electronics, enabling pressure equalization, thermal management, and contaminant protection in harsh environments.

Ideal for electric, hybrid, and traditional equipment, devices & vehicles, SAATlvent APR membranes support reliable venting in ECUs, sensors, and lighting, maintaining durability under thermal and chemical stress. Fully PFAS-free and regulation-compliant.

## Key Benefits

- Rapid pressure equalization
- Effective thermal management
- High protection against fluids and particulates
- Compatible with Snapfit & Screwvent assemblies
- PFAS-free and compliant with automotive standards

| SAATlvent APR Series                    |                      |         |         |            |
|-----------------------------------------|----------------------|---------|---------|------------|
| Product                                 | APR05HF              | APR20HF | APR45HF | APR20HF XT |
| Min Air Permeability L/cm²h (@ 70 mbar) | 5                    | 15      | 35      | 15         |
| Thickness (µm)                          | 90                   |         |         | 85         |
| Max Temperature (°C)                    | 120                  | 120     | 120     | 280        |
| Part Level IP Rating                    | IP67 / IP68 / IP69K* |         |         |            |

\* IP69K achievable under specific conditions

SAATlvent APR

# Testing & Validation

Advanced Laboratories to Guarantee Consistency and Performance

SAATI operates advanced laboratories dedicated to quality control, material development, and acoustic performance. This ensures every SAATlvent® NM membrane meets the reliability and performance standards required by leading device manufacturers.

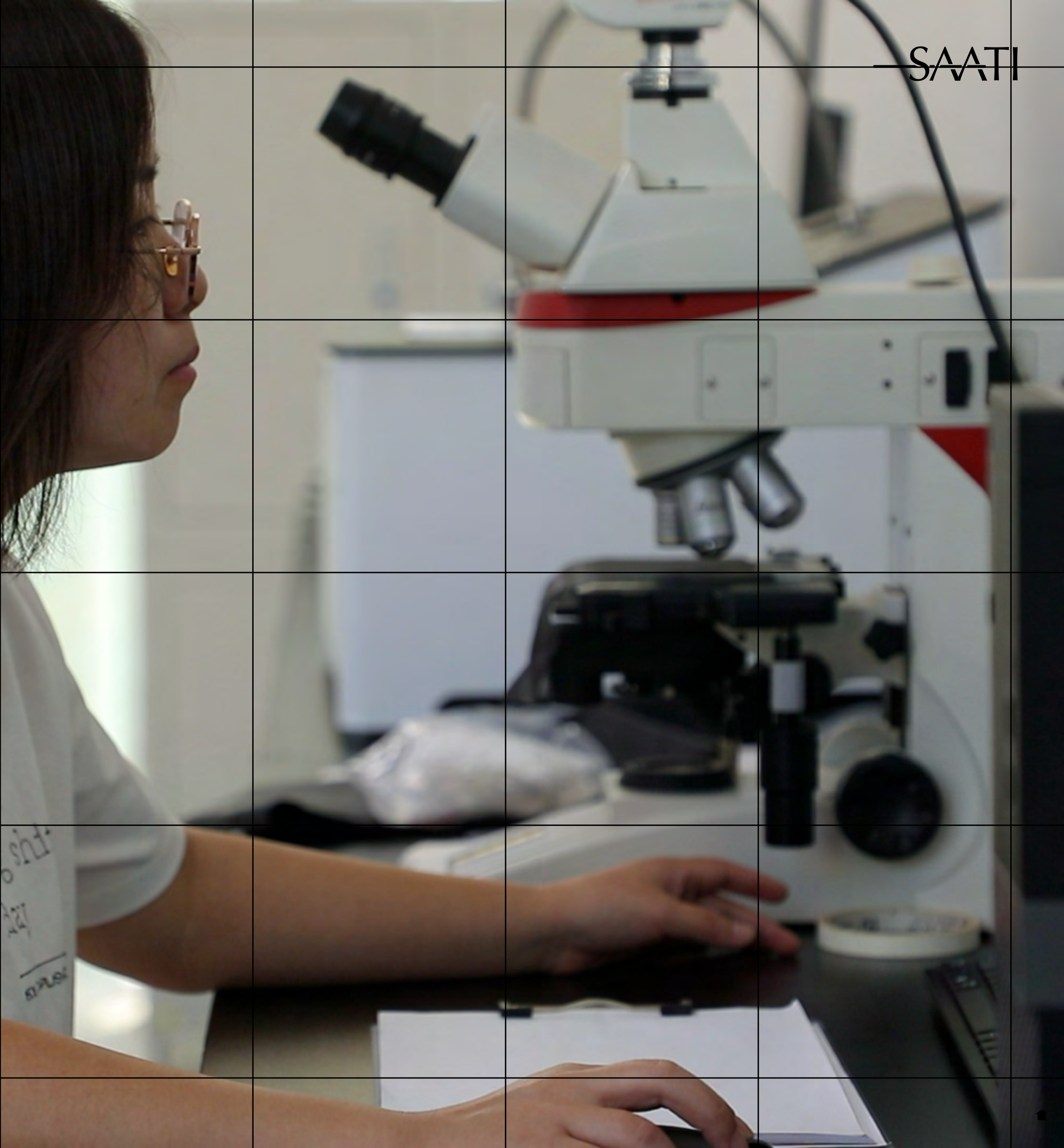
## Material & Media Characterization

- Optical and SEM microscopy for surface and morphology analysis
- Porometry and air permeability to define pore structure and flow
- Contact angle measurement for hydrophobic behavior

## Acoustic Performance Testing

- Acoustic impedance and insertion loss
- THD and SPL measurements for membranes and vents
- Simulation and modeling of membranes and sound-transparent media to predict acoustic response and optimize designs

From raw materials to finished membranes, SAATI provides engineers with validated data and predictive insights to accelerate product development.



# Innovation Center

Where Materials, Engineering and Market Needs Converge

SAATI's Innovation Center is a strategic asset dedicated to transforming ideas into engineered solutions. It supports both product innovation and process development, bridging customer needs and material science through a structured, multidisciplinary approach.

Organized into four synergic functions, the center enables fast feasibility validation, application-tailored prototyping, and early-stage performance assessment — accelerating time-to-market and reducing technical risk.

## Advanced R&D

- Scouting and evaluation of emerging materials and technologies
- Development of functional treatments and applied innovation for next-generation media

## Product Development

- Transformation of market input into product concepts
- Feasibility analysis, rapid prototype creation, and pre-series production
- Early validation of technical and industrial scalability

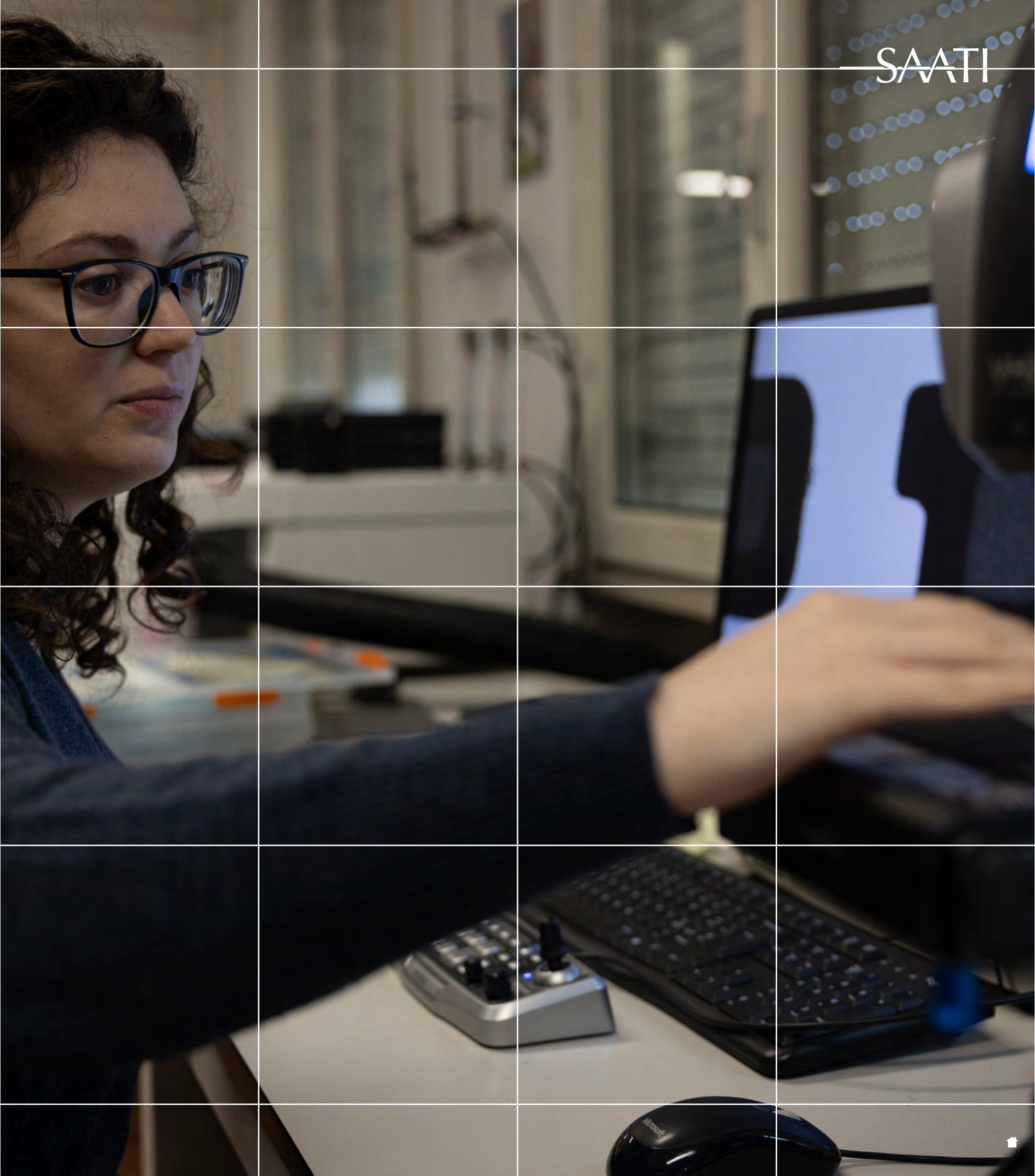
## Application Engineering

- In-depth application studies to optimize integration, durability, and cost-efficiency
- Support for design-to-performance matching
- Internal standardization and process harmonization

## R&D Lab

- Testing and characterization of prototypes and raw materials
- Collection of performance data and comparative results
- Continuous integration of new testing protocols and analytical methods

SAATI combines laboratory precision with industrial reliability — ensuring every solution meets the highest automotive standards.



# Choosing The Right Membrane Starts With A Conversation

Technical Dialogue. Tailored Solutions.  
Reliable Integration.

Selecting a venting membrane is not only a material decision. It is a design choice that affects reliability, integration, and long-term performance.

SAATI supports engineering and product development teams in identifying the most suitable membrane solution for their specific application, providing:

- Support in material selection based on acoustic, thermal, or barrier requirements
- Guidance on integration options (laminates, adhesives, die-cut parts)
- Custom configurations and prototyping when needed
- Full compliance with PFAS-free regulations, RoHS, and REACH

To evaluate a membrane, discuss technical needs, or to request documentation, SAATI's team is available to assist.



**SAATI produces many products for all types of markets that find their way into the daily life of billions of people. We are leaders in both process and microfiltration, screen printing, and personal and vehicular multi-threat protection products.**

## Over Ninety Years of Innovative Action

SAATI is a multinational group with corporate headquarters that have been situated in northern Italy since 1935. Today SAATI is a leading force in the development, manufacturing and commercialization of high tech filter media & chemicals.

SAATI's passion and creativity are the foundation for an unsurpassed tradition of continuous innovation in the filtration markets. This endless pursuit is what drives SAATI's dedicated customer-centric R&D to functionalize products beyond simple filtration.

The offering includes a broad range of synthetic fabrics and fabricated components — available in Polyester, Nylon, Polypropylene, PPS, and PEEK — engineered to ensure dimensional stability, mechanical strength, and cleanliness across narrow micron tolerances (7 to 3,000 µm). These materials are designed for consistent performance in demanding filtration environments.

In parallel, SAATI designs and produces functional venting membranes for pressure equalization, combining air permeability and liquid repellency to protect sensitive devices and systems. Tailored polymer formulations and precision processes ensure each membrane delivers reliable and application-specific performance.

## Perfecting the Art of Precision Filter Media

With over 1,000 employees spread across multiple facilities worldwide, and a strong established track record in innovation and manufacturing excellence, SAATI's mission is to improve the life of every person every day – through working with both customers and partners to create a safer, healthier and cleaner world.

To guarantee product reliability, SAATI constantly runs tests and has all of the strictest and most up to date certifications that validate the consistency, performance, quality and characteristics of each item.

Specific SAATI fabrics are tested and certified in accordance with USP CLASS VI/ISO 10993 Regulations, and these fabrics are inspected and transformed into customized shapes in Class 10,000/ISO Class 7 Clean Rooms in accordance with UNI ISO 9001 regulations.

# Interactive Index

## Symbols

120°C [14](#)

280°C [14](#)

## A

Acoustic [08](#)

Acoustic Transparency [08](#)

Application Engineering [18](#)

Audio Devices [08](#)

Automotive [12](#) [14](#)

## C

Characterization [16](#)

Chemical Resistance [14](#)

Company Information [22](#)

Condensation Prevention [03](#)

Consumer Electronics [08](#) [10](#)

Contact [20](#)

Contaminant Protection [03](#)

## D

dB Loss [08](#)

Disclaimer [25](#)

## E

Electronics [12](#)

Electrospinning [04](#)

## H

High Temperatures [12](#)

Hydrophobic [08](#) [10](#) [12](#)

## I

Industrial Electronics [12](#)

IP67/IP68 [08](#) [10](#) [12](#) [14](#)

IR69K [14](#)

ISO 10993 Regulations [23](#)

## J

JEDEC reflow cycles [12](#)

## L

Laboratories [16](#)

## M

MEMS microphones [12](#)

Microphones [08](#)

## P

PFAS-Free [03](#) [08](#) [10](#) [12](#) [14](#)

Phase Inversion [05](#)

Pressure Equalization [03](#) [10](#) [14](#)

Product Development [18](#)

## R

R&D [18](#)

REACH Restrictions [A2](#)

RoHS Restrictions [A2](#)

## S

SAATivent APR Series [14](#)

SAATivent M Series [12](#)

SAATivent NM Series [08](#)

SAATivent Product Range [06](#)

SAATivent PR Series [10](#)

Sensor Housings [12](#)

Sensors [12](#)

Smart Devices [08](#)

## T

Technical Disclaimer [25](#)

Testing [16](#)

Thermal Management [12](#) [14](#)

## U

USP CLASS VI [23](#)

## V

Validation [16](#)

Venting Membranes [02](#)



# Disclaimer

The information provided in this brochure is intended for general informational purposes only. While we strive to ensure the accuracy and reliability of the details about our products, we can not guarantee that all information is complete or up-to-date. Users should request to SAATI for the technical specifications of the products before submitting any purchase order and verify the suitability of products for their intended use as well as products compliance with any applicable laws, based on such use.

We strongly recommend conducting appropriate tests and evaluations to ensure compatibility and safety for specific applications.

SAATI is not responsible for any damage or harm resulting from the improper use, application or handling of the products. Always follow the safety instructions provided with each product and consult relevant guidelines and regulations in your region before use.

All products, drawings, products specifications and data in this brochure are subject to change without notice to improve reliability, function, design or otherwise. Not all products and/or product features may be available in all countries and regions.

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