

AUTOMOTIVE HEADLAMP VENTING

Maintain High Air Permeability Without Sacrificing Protection Against Water & Dust

CHALLENGE

Manufacturers of clear glass systems used in automotive headlights often experience a conflicting challenge. If headlights are sealed properly, unwanted water droplets and dirt, which can cause reduced illumination or malfunctioning, cannot ingress the housing. This is ideal but often comes at the cost of air permeability which makes it impossible for even stationary moisture – caused by diffusion through the housing wall – to escape. In contrast, if headlights are equipped with generous vents, it will facilitate greater air exchange and moisture reduction. This, however, comes with the increased risk that a certain level of dust, dirt, and water droplets may enter the housing along with the airflow.

The technical challenge brought to Oxyphen by the customer, a manufacturer of automotive lighting equipment, was to develop and design a hydrophobic membrane venting solution that would address four key design challenges.

Protection

The membrane should protect the housing from the ingress of water, dust, oil, and other harmful particles.

Air Flow

The membrane should maintain adequate air flow to avoid condensation caused by diffusion.

Ease of Assembly & Durability

The membrane should be highly durable and easy to attach.

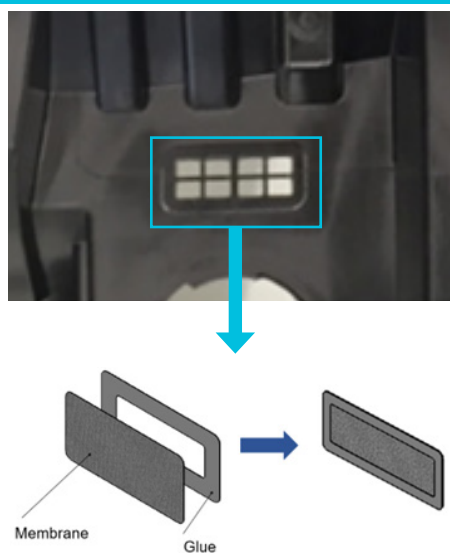
Temperature

The membrane should meet customized temperature stability requirements specific to the application.

SOLUTION

After fully understanding the task at hand, Oxyphen worked with the customer to determine that OxyPad® self-adhesive membrane pads would be the best solution for their automotive application. This membrane features high air permeability and therefore avoids misting and condensation build-up within the headlight unit and cover glass. At the same time, it also provides protection against the penetration of all dust and water droplets due to its hydrophobic surface properties. In addition, the plastic part of the assembly is designed as a labyrinth to minimize any damaging effects caused by splash water, pressure cleaners, and stone chippings. In the event that water is still able to penetrate the labyrinth seal, the membrane face will act as a drainage facility to eliminate any excess moisture.

HOW PRODUCT WORKS



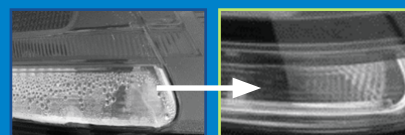
RESULTS

Once Oxyphen's OxyPad® venting solution was implemented, the customer was able to observe distinct benefits compared to the previous design including:

A **nearly total elimination** of misting

Full protection against dust, dirt, and water penetration

Adequate air flow which has prevented thermally induced cracks



About Track-Etched Membrane Technologies

For nearly 70 years, Oxyphen has specialized in the production of microporous track-etched membranes and membrane products, serving customers around the globe with 60 employees located between two manufacturing facilities in Switzerland and Germany.

Oxyphen has two core competencies: Developing and producing track-etched membranes and processing and assembling complete membrane devices through large volume production. Our wide network of qualified suppliers, particularly those with injection molding expertise, and highly qualified team work together to build a dedicated enterprise that is focused on delivering an unmatched level of service and performance to our customers.



Oxyphen has two manufacturing facilities – one in Germany and another in Switzerland. Both are ISO 9001:2008 and ISO TS 16 949:2008 certified and have full clean-room capability.



Automotive Solutions

In the challenging automotive environment, protection against liquids and dirt as well as reliable pressure compensations are critical to avoid damage to sensitive electronic and lighting components throughout the vehicle's lifetime. Oxyphen's automotive membrane products are designed to ensure continuous functionality of critical components such as battery packs, radar systems, and lighting equipment being used in next generation automotive designs.

Oxyphen technologies and products comply to existing and upcoming regulations without compromising performance needs. With decades of experience in tailored venting solutions, we like to be your partner for sustainable and cost-effective solutions that you can trust on for years.

Getting Started with Oxyphen

As you think about your design project, consider the below questions and then reach out to us for a design consultation with one of our engineers. It's easy to reach someone at www.oxyphen.com/about-oxyphen/contact-us or click this QR code.

