



Supor® 450R membrane prevents moisture and particulate contamination in photovoltaic module junction boxes

Overview

Photovoltaic (PV) cells or solar cells are used to convert sunlight into electricity. Individual PV cells are commonly used to power small consumer electronic devices such as calculators. For devices requiring greater amounts of energy, individual cells are combined to form PV modules, also called solar modules. Larger scale systems are created by connecting several PV modules together via electrical wiring and junction boxes. These systems are capable of producing large quantities of clean, renewable energy.

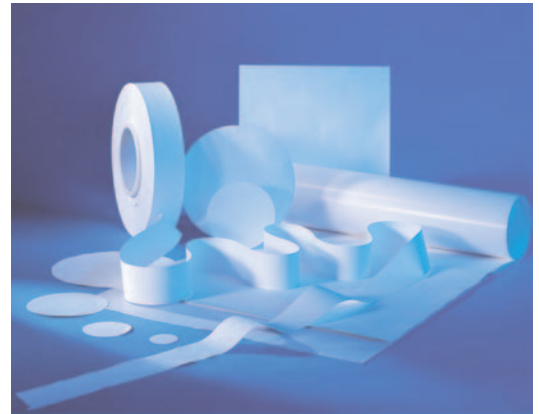
The Challenge

Photovoltaic modules are safe and are very reliable when properly installed. In fact, the life of a single photovoltaic module is estimated to be 20 years or greater. Junction boxes are common points of failure because they are continually exposed to a variety of environmental conditions such as temperature cycles, ultraviolet (UV) light, dust, rainfall, etc. Intrusion of moisture or condensation can lead to corrosion of the electrical contacts. This results in a decreased power output or in safety issues.

So it's essential to protect the boxes and preserve the internal wiring in order to keep the system running at full capacity.

The Solution

A major materials converter, working together with Pall, has developed a pressure compensation seal (PCS) for ventilating solar module junction boxes. The materials converter die cuts discs from Pall's Supor® 450R membrane rolls and adds adhesive to the membrane. The membrane vent patch is then attached to a dispensing tape and sold to various PV module makers. This self-adhesive seal is affixed to a small opening on the junction box to allow for proper ventilation of



the unit (see Figure 1). The membrane provides excellent airflow at high water intrusion pressure (WIP), and does it at an economical price. The PCS has been tested and meets IP67 standards.

The pressure compensation seal is designed to withstand major temperature changes, is splash-proof, and prevents moisture from entering the unit while allowing heat to escape.

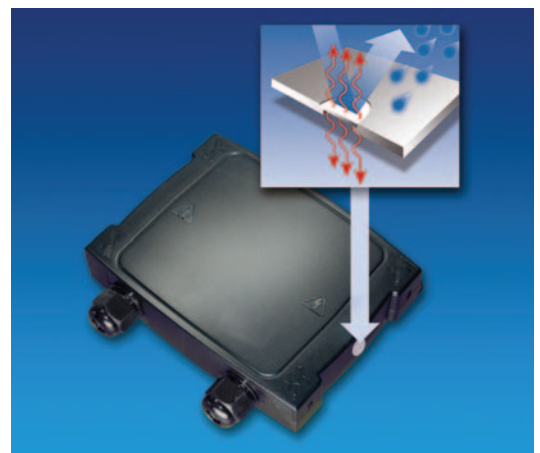


Figure 1: A pressure compensation seal shown on a PV module junction box

The Supor 450R membrane is proven to eliminate moisture and particulate contamination when used in venting applications. Additional benefits of venting include:

- Contamination control
- Pressure equalization
- Temperature stabilization
- Increased system reliability
- Corrosion-free internal parts
- Cost savings – fewer repairs, more efficient running

Performance

Pall's Supor 450R membrane is proven to work for years under adverse conditions and is effective at protecting the internals of the PV module junction box. Supor 450R membrane has the best price-performance (airflow, WIP) ratio on the market. To learn more about our membrane, please contact your local Pall representative.

About Pall Corporation

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Part Number	Description	Rating (µm)	Support Type	Suggested Maximum Operating Temp. °C (°F)	Oil Rating (1-8) ¹	Minimum Thickness (mils)	Maximum Thickness (mils)	Water Intrusion psi (bar)	Air Flow Rate ²
80526	Supor 200R	0.2	Nonwoven polyester	250 (482)	8	4.7	8.5	≥ 20.0 (1.38)	≥ 6.0
80535	Supor 450R	0.45	Nonwoven polyester	250 (482)	8	3.0	6.4	≥ 12.0 (0.83)	≥ 28.0

¹ Hydrocarbon resistance test was performed according to AATCC Test Method 118-1989.

² Air flow rate units: Lpm / 3.7 cm² @ 13.5 psi (0.9 bar)

For additional information please see Supor R Membrane Data Sheet IMGSRMENA.



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