

CUSTOMER

Developer and manufacturer of technologically advanced shipping pallets

PART

PTFE Venting Membrane Disc

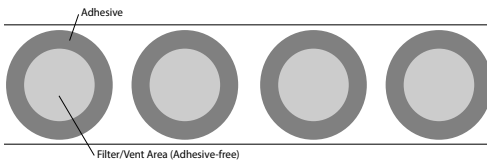
MATERIAL

PTFE breathable membrane disc; perimeter laminated with double-sided adhesive tape

MARIAN ADVANTAGE

Expert material knowledge; excellent service; ability to manufacture final parts kiss-cut to a roll

SOLUTION



This company turned to Marian for a solution. Marian quickly responded, recommending a die-cut venting disc made with PTFE membrane material, the perimeter laminated with high strength PSA. Marian was confident in the material recommendations, explained further below:

- The chosen **PTFE membrane material** is used in sealed devices to allow pressure equalization due to temperature changes and minimizes condensation, while keeping dust, dirt and moisture out of the enclosure. The material is rated to IP 64, 67, and 68.
- The **tackified acrylic adhesive** has a high adhesion level and excellent resistance to demanding environmental conditions.

Marian stocked both materials, allowing for quick delivery of samples and prototypes. The customer performed a number of tests, and determined that the Marian solution met their requirements. Marian laminated and die-cut the venting discs precisely to the customer's ID and OD specifications. The discs were provided kiss-cut to a liner per the customer's requirements for final automated placement within the "smart" shipping pallet.

CHALLENGE

A company was developing a "smart" shipping pallet that was to be durable, sustainable, light weight, and hermetically-sealed with a polyurethane antimicrobial coating. A section of the pallet would contain advanced electronic components and sensors to enable the pallet to actively monitor temperature, humidity, motion, and impact. In many industries, careful tracking of this information can be critical to the quality of the product the pallet is carrying. Additionally, the pallets could potentially be exposed to wash or sterilization cycles, and other harsh conditions.



IP Rated Enclosure: The "brains" of the smart pallet were designed within a small, attached enclosure that must be sealed to protect the sensitive electronics contained within from dust, debris and moisture while, at the same time, allow air flow within the container to prevent the buildup of humidity condensation. The designers hoped to obtain an IP Rating of IP64 and IP67.

- **IP64** = Dust tight(6); Protected against water splashed from all directions(4)
- **IP67** = Dust tight(6); Protected against the effects of immersion in water between 15 cm and 1m for 30 minutes(7)

Pressure Equalization: Additionally, as the electronic elements heat and cool during use, pressure is created within the enclosure. Build-up of pressure within the enclosure could damage the electronics and/or warp the enclosure.

Automated Assembly: Lastly, the pallets will be manufactured using automated assembly. The final packaging of the solution would need to fit seamlessly into the automated assembly line.