



PACKAGE TEST CARTRIDGES: LARGE CAPTURE VOLUMES

Permeation Egress Testing Made Easy

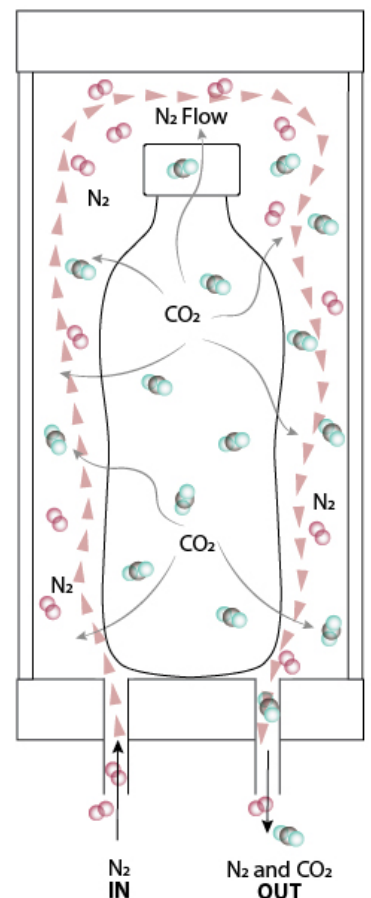
Traditionally most permeation testing measures the permeant ingress coming into a system (i.e. bottle with closure) or through some barrier (medium) such as a film. Permeation egress testing quantifies how much permeant leaves a closed system. For example, understanding how much carbon dioxide gas leaves a pressurized soda bottle is valuable information in determining the product shelf life since the soda will not taste good if it is flat.

The most popular examples for egress testing are pharmaceutical blister packs. These blisters are generally small, and one may need to test multiple blisters at once to obtain a readable signal. Products that are much larger are more difficult to test properly. Two-liter soda bottles, automobile airbags, saline bags and gastric balloons are some examples of egress testing for large products.

Larger products require larger vessels for egress testing. The vessel must be impermeable and large enough to house the product. A carrier gas purges the inner volume of the vessels and routes any permeant leaving the system through a detector.

Traditional egress testing for large samples used epoxy to seal the vessel (fig x). Using epoxy to seal a capture volume has limitations, especially for high barrier samples that need the vessel leak rate subtracted. Epoxy may not cure the same consistently, thus the seal will not be the exact same for the leak rate test as it was for the test samples.

Producing consistent sealing will increase the accuracy and repeatability of these tests. AMETEK MOCON now has large capture vessels, in four different sizes, to accommodate a variety of packaging systems.



CHOOSING A CARTRIDGE BASED ON APPLICATION NEEDS

Applications

The large capture vessels are used for larger packages that contain test permeant. Air bladders for basketballs and footballs contain air (i.e. oxygen). Syringes contain liquid solutions for drug delivery (i.e. moisture). Sometimes egress analysis is used because it may be easier to inject water into a package and measure how much moisture is leaving versus sealing purge lines into that package and placing the sample in a humidified environment. Best practice requires choosing a vessel that minimizes dead volume when the sample is placed inside, which decreasing time to equilibrium while increasing throughput.



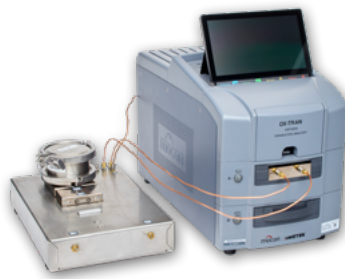
Filled samples for water vapor egress testing.

Preparing a sample for egress testing:

1. Place sample containing permeant driving force within a vessel
2. Apply grease to gasket and seal by tightening screw
3. Engage capture vessel to package instrument or PackRack



Glass vial egress testing.



Egress testing using PackRack

Available sizes of capture vessel cartridges:

		Part Numbers	
	Size	Ea	Set of 4
4x2"	10.16x5.08 cm	054-591	054-592
4x12"	10.16x30.48 cm	054-593	054-594
6x4"	15.24x10.16 cm	054-595	054-596
6x18"	5.24x45.72 cm	054-597	054-598

Benefits

- Compression seal with gasket and grease (no epoxy)
- Faster, easier prep
- Increased accuracy and reproducibility
- Increased test throughput
- Allows testing for hard to seal packages
- Non-destructive permeation testing

Our experts listen to your needs and offer customized solutions.

At AMETEK MOCON we continually expand our extensive cartridge line based on customer testing requirements to ensure accurate and consistent test results. With over 55 years of industry experience behind the designs, our interchangeable cartridges address general industry challenges as well as specific customer requests.

