PERMEATION TEST OF PREFILLED PACKAGE WITH CAPTURE VESSEL CARTRIDGE

Our tools will help you verify the integrity of the package barrier for gas egress.

Background

Permeation testing typically involves the ingress of a test gas, such as oxygen or water vapor, through a sample barrier material. However, many situations require the additional variable of gas egress, such as determining how long a carbonated drink will retain CO_2 for freshness, the air egress of bladders used inside shoe soles, or the vapor barrier of a prefilled syringe. These examples require special setups and fixtures to verify the egress of a test gas.

Unique Design of the Capture Vessel Cartridge

In prefilled samples, the sample is filled with the desired test gas, so no external test gas supply is required. The measurement is made by monitoring the test gas coming from sealed packages. With the Capture Vessel Cartridge, the test gas is captured while the carrier gas flushes the interior of the cartridge and the test gas molecules are sent to the sensor for quantification (Fig. 1). This type of laboratory test is non-destructive; there are no holes punched or incisions made. The package sample is truly tested as a whole system.

Various available sizes of the Capture Vessel Cartridge for prefilled packages

HOW TO TEST FOR GASES THAT PERMEATE FROM THE PACKAGE

TECHNICAL NOTE

Use of the Capture Vessel Cartridge

The MOCON® Capture Vessel Cartridge is available in various sizes and can be directly used with the MOCON OX-TRAN® 2/40 and OX-TRAN 2/48 and AQUATRAN® 3/40 Package Permeation Analyzers (Fig. 2). To use this cartridge with MOCON Film Permeation Analyzers such as the OX-TRAN 2/12 or OX-TRAN 2/22, PERMATRAN-C® 4/30, PERMATRAN-W® 3/34 or AQUATRAN 3, a PackRack® fixture (054-175) and Remote Testing Cartridge Adapter Kit (054-030 or 054-028) are needed.

Referring to Fig. 3, the prefilled package test can be done with as little effort as the following simple steps:

- First, select the proper size of capture vessel to minimize the void space for more flushing efficiency
- Loosen the top knob, remove the clamp and open the top cover from the Capture Vessel Cartridge
- Place the prefilled package inside the void space of the Capture Vessel Cartridge
- Replace the top cover, clamp and tighten the knob
- Place the Capture Vessel Cartridge inside a package permeation analyzer; or if testing with a film permeation analyzer, on a PackRack that is connected to the carrier gas lines of the film analyzer
- Engage the Capture Vessel Cartridge with the carrier gas connection on the test station manifold (or PackRack manifold)

Note: For testing WVTR of prefilled blister or tiny package samples, a different cartridge is used. Please refer to Technical Note Testing WVTR of Pre-filled Blister Samples for details.

Conclusion

The specialized Capture Vessel Cartridge, when combined with permeation analyzers from AMETEK MOCON, allows you to evaluate your sample's barrier properties quickly and accurately with great ease. A user guide will be provided if you purchase the Capture Vessel Cartridge. For your specific applications, please contact a sales representative in your area.

Fig 1. CO_2TR testing of prefilled package for carbonated drink

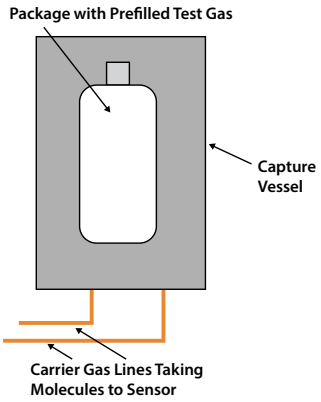


Fig 2. Testing air prefilled samples inside Capture Vessel Cartridge with OX-TRAN 2/48

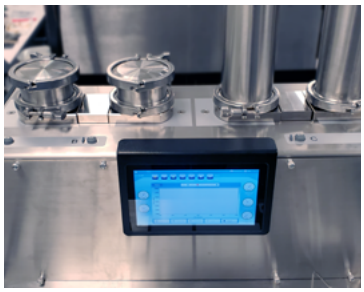
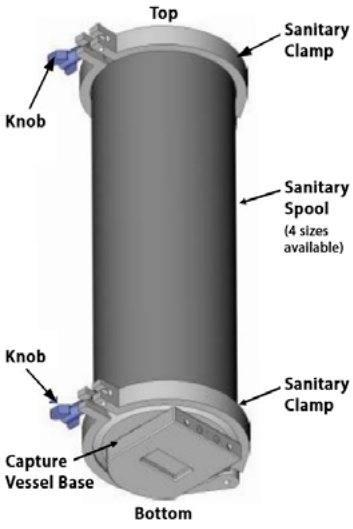


Fig 3. Capture Vessel Cartridge diagram



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