CARTON PERMEATION TESTING MADE SIMPLE WITH THE CARTON TEST CARTRIDGE

Easy sample preparation for carton permeation testing without tubing or epoxy.

Background

Cartons are commonly used for packaging liquid food products such as milks and juices. To ensure the product shelf life, the package's permeation characteristics or barrier properties (OTR and/or WVTR) need to be tested. Conducting the permeation testing usually involves special sample preparation and setup.

Testing Transmission Rates for Whole Packages

In permeation testing, a diffusion cell refers to a configuration intended to measure the permeant concentration rate across a sample barrier material. For film samples, the test area is clearly defined and the diffusion cell is limited to a single flat barrier. Testing whole packages such as cartons is an important aspect of package development, and can reveal critical compromising flaws. However, formed package permeation testing poses issues: since the area the gas can permeate is now three-dimensional, the test method must change.

Typically, setup for testing the permeation rate of whole packages is a long and intricate process, requiring the use of copper tubing and epoxy, and extended wait times to let the epoxy cure. The level of preparation involved can also result in less consistent data.

An alternative method for testing whole carton packages is the reusable MOCON® Carton Test Cartridge.

HOW THE CARTON PACKAGE IS TESTED FOR PERMEATION

TECHNICAL NOTE

Use of the Carton Cartridge

The Carton Test Cartridge can be directly used with the MOCON OX-TRAN® 2/40, 2/48 and AQUATRAN® 3/40 Package Permeation Analyzers. With the help of the PackRack® (PN 054-175) fixture and Remote Testing Cartridge Adapter kit (054-530), this cartridge can also be used with MOCON Film Permeation Analyzers such as OX-TRAN 2/22 or PERMATRAN-W 3/34.

Referring to Figures 1 through 3, a carton permeation test can be done with as little effort as the following steps:

- First, use the knife and Cutter Guide to trim an oval hole on the side of the carton sample (Figure 1)
- Prepare the cartridge by ensuring the O-rings are lightly greased and positioned correctly
- Following the details described in the cartridge user guide, insert the oval Package Adapter into the carton opening, and then securely assemble the carton sample onto the Carton Test Cartridge (Figure 2)
- Place the Carton Test Cartridge inside a package permeation analyzer (Figure 3); 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 cartridge with the carrier gas connection on the test station manifold or PackRack manifold

Figure 1. Trim off an oval opening on the side of the carton sample

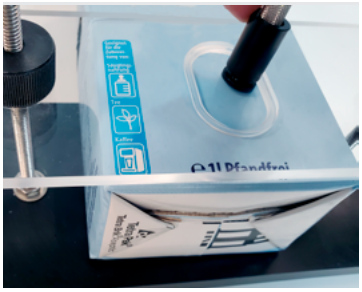


Figure 2. Inserting the oval Package Adapter into the carton opening

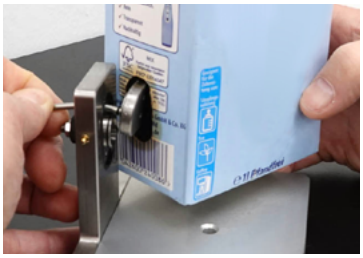
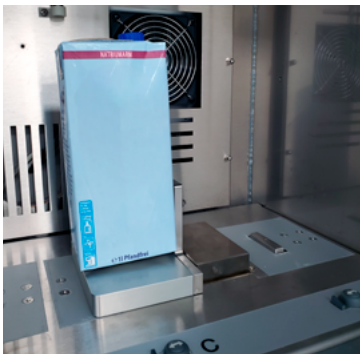


Figure 3. Place the carton sample inside a permeation analyzer



Conclusion

With the benefit of TruSeal® technology and no epoxy interface needed, the cartridge seal is very secure and test results are more reproducible. The MOCON Package Permeation Analyzers and Carton Test Cartridge make testing these traditionally challenging packages easy and reliable.

A special user guide will be provided if you purchase the Carton Test Cartridge. For your specific applications, please contact a sales representative in your local area.

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TN-PPS-5024 Ho to Use Carton Package Cartridge-1224-1.2

AMETEK MOCON
7500 Mendelssohn Ave. N
Minneapolis, MN 55428 USA
info.mocon@ametek.com
www.ametekmocon.com