

HOW TO ACHIEVE MORE CONSISTENT TEST RESULTS USING EDGE EFFECT CARTRIDGES



Edge Effect Cartridges are a simple and accurate way to minimize edge effect while testing transmission rates of coated paper materials.

Challenge

Legacy testing methods lack the ability to precisely test oxygen transmission rates (OTR) and water vapor transmission rates (WVTR) in coated paperboard packaging materials. The reason companies often have difficulty obtaining consistent permeation test results for coated paper materials is due to edge effect.

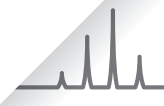
Edge effect occurs when oxygen and/or moisture from the ambient environment leaks through the edge of a permeation test sample such as coated paper, coated paperboard or laminate. Typically, edge effect influences test results when ambient air or moisture increases or dilutes the desired test gas gradient.

Solution

MOCON Edge Effect Cartridges are designed to eliminate edge effect by effectively sealing off the edge during testing to prevent oxygen and/or moisture from migrating into or out of the test cell. This ensures more precise and repeatable data on transmission rates through the material, not the edge. Edge Effect Cartridges can be used to test samples up to 125 mil (1/8") or 3.175mm thick.



Many environmentally friendly packages utilize paper-based materials



EDGE EFFECT CAN LEAD TO INACCURATE & VARIABLE DATA

Benefits

When used with OX-TRAN® Model 2/12, 2/22 or PERMATRAN-W® Model 3/34, Edge Effect Cartridges provide accurate and consistent data, so customers can make better, more informed decisions about packaging materials to protect their products.

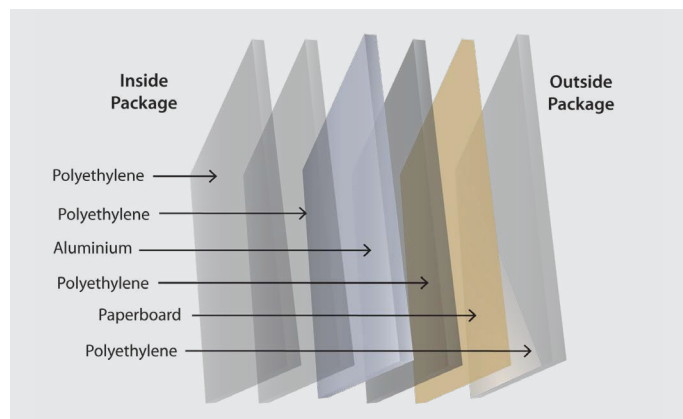
Obtaining accurate transmission rate results enables companies to select the most effective coatings and lightweight packaging that reduce costs and deliver desired shelf life while protecting the OEM brand contents.

Case Study

The following test results illustrate the variability in WVTR using a standard cell compared to an Edge Effect Cartridge.

PRODUCT: COATING 501/PAPERBOARD D

Test Date	WVTR g/(m ² · day) at 23°C and 50% RH	
	Standard Cell	Edge Effect Cartridge
JANUARY 5	3.24	4.36
JULY 20	5.78	4.50
COMMENTS	More variation with seasonal ambient RH	Consistent, not influenced by environment RH



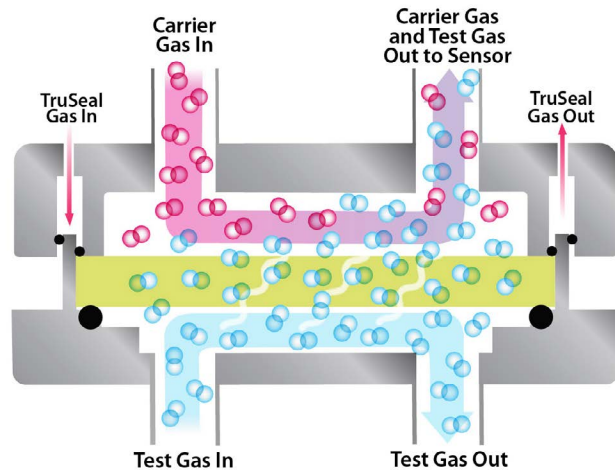
Many paper-based material integrate additional layers to increase barrier protection

Types of Edge Effect Cartridges

There are two types of MOCON Edge Effect Cartridges:

- One type is designed to test OTR, and/or WVTR with precise relative humidity (RH). This type has two small holes for test gas inlet and outlet in the test gas chamber.
- The other type of Edge Effect Cartridge is designed to test WVTR with 100% RH. This type has one small hole to vent pressure in the test gas chamber and a sponge.

It is important to select the specific Edge Effect Cartridge for testing at precise RH or 100% RH.



Edge Effect cartridge design blocks leakage from the cross section of the barrier sample



Edge Effect cartridge 2-piece design is easy to use