

NEW CARTRIDGE MAKES PERMEATION TESTING OF FLEXIBLE POUCHES EASIER

Due to the flexible nature of pouches, reliable permeation test results have been challenging

Challenge

In the past, barrier property testing for flexible pouches has been an 'artsy' task subjective to the technician's skill & experience. Placement of the purge lines, epoxy preference, and sealing surface prep may vary substantially amongst technicians. Flexible pouch permeation testing has always been challenging, time consuming, and subjective; thus resulting in a high amount of variability.

Application

Preparing the sample for testing is the most significant aspect in obtaining repeatable accurate data. Historically, pouch testing was always a difficult task due to the cumbersome and artsy sample preparation. Often, the prepared samples are quite fragile at the epoxy/pouch interface, thus making them difficult to handle.

Therefore, technicians had to be very careful when preparing pouch samples for whole package testing to overcome the following challenges:

- Properly cut a small slit using a sharp knife
- Seal the tubing with epoxy into flexible pouch without covering too much surface area
- Time consuming and laborious mounting process



Fig 1. Detailed View of Integrated Pouch Test Cartridge



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- Gentle handling to prevent damaging the “touchy” epoxy seal to the flexible pouch
- Variability between technicians and methods
- Threaded fitting to mount that can wear and cause leaks
- Brittle epoxy seal could be easily compromised by slightest carrier gas pressure.

The above challenges often discouraged people from testing whole pouches.

A once arduous task has now become simple due to the advent of MOCON’s Integrated Pouch Test Cartridge (Fig 1)

Comparing the time needed to prepare samples.

Method for sample Prep	Sanding, cutting slit, insert tubing, epoxying	Post-Epoxy curing to max. strength	Punch holes, insert, seal by thumb screw	Total Time for Sample Prep
Pouch Cartridge	N/A	N/A	2-5 mins (depending on experience)	Up to 5 min
Tubing/Epoxy	30 min (if tested dry)	Overnight 16hrs (if tested wet)	N/A	30 min to 16hrs

Sample Mounting Method	Sample 1	Sample 2	Sample 3	Standard Deviation
Pouch Cartridge	0.00152	0.00138	0.00135	0.00009
Tubing/Epoxy	0.00155	0.00136	0.00119	0.00018

Solution

This revolutionary pouch testing solution incorporates a simple punch tool, an insert spacer for gas purging, and a compression sealed interface. This in conjunction with TruSeal technology increases sample repeatability, accuracy, and throughput. Overall variability and prep time are reduced. No more using sandpaper to abrade sealing surfaces, nor messy epoxy. Say goodbye to test subjectivity due to technician experience or preference.

With no leaks at the package/epoxy interface, the cartridge seal is more secure and robust. This compression seal allows the pouch to be held tightly thus maintaining integrity through any pressure fluctuations during analysis. The cartridge easily mounts to an instrument by the push of a button, eliminating potential leaks caused by nuts and ferrules.

Fig 2. Test pouch samples with Integrated Pouch Test Cartridge



The pouch cartridge (Fig 2.) interfaces directly to the MOCON OX-TRAN 2/40, AQUATRAN 3/40, as well as Legacy and Next Gen permeation analyzers when used in conjunction with the Pack Rack testing fixture.

Benefits

The Flexible Pouch Test Cartridge has revolutionized pouch permeation testing.

Variables	Tubing/Epoxy Method	Flex Pouch Cartridge
Prep Time	30 min to 16 hours	Up to 5 min
Seal Integrity	Variable and Fragile	Repeatable and Robust
Equipment	Knife, sandpaper, epoxy, tubing	Hole Puncher
Subjectivity	High	None
Test Result Accuracy	More Variable	Less Variable
Operator Dependent	High	Minimum

Conclusion

To ensure product shelf life, the finished package must be evaluated for its true barrier protection level (Fig 3.). MOCON OX-TRAN 2/40 and AQUATRAN 3/40, along with variety of package cartridges make testing barrier properties of packages much easier, more reliable, and effective.

If you are interested in a smoother permeation package testing experience, contact us now.

