

Permeability Testers



WVTR
OTR
CO₂TR

Authorised Agent

HEM TECHSYS
PRIVATE LIMITED

Extrasolution is committed to provide the latest technology in the field of PERMEATION measurement. Innovative approach and excellent technical knowledge backs each Extrasolution Products.

Extrasolution have developed and launched many **UNIQUE** Instruments in addition to the conventional range of products. like,

TotalPerm : 3 in 1 Instrument

Measures WVTR + OTR + CO₂TR in a single Instrument

MultiPerm : 2 in 1 Instrument

Measures WVTR + OTR in a single Instrument

PermeO₂ + : Two Side Humidity control

Measures OTR with RH control on both the side (Test Gas Side as well as Carrier Gas Side)

GasLogger : Wireless !!!

O₂ + RH + TEMP +PRESSURE Data Logger

TotalPerm 3 in 1 Instrument

Patented
Technology

Only of its kind in World Market



WVTR
ASTM F 1249
OTR
ASTM F 2622
CO₂TR
ASTM F2476



Measures WVTR + OTR + CO₂TR in a single Instrument

Test Range H₂O

0.002-100 g.m⁻².24h⁻¹.bar⁻¹ (unmasked)

0.04-2000 g.m⁻².24h⁻¹.bar⁻¹ (masked)

Test Range O₂

0.01-15000 cm³.m⁻².24h⁻¹.bar⁻¹ (unmasked)

0.2-80000 cm³.m⁻².24h⁻¹.bar⁻¹ (masked)

Test Range CO₂

0.25-18000 cm³.m⁻².24h⁻¹.bar⁻¹ (unmasked)

20-360000 cm³.m⁻².24h⁻¹.bar⁻¹ (masked)

MultiPerm 2 in 1 Instrument

Only of its kind in World Market

Measures WVTR + OTR in a single Instrument

Test Range H₂O

0.002-100 g.m⁻².24h⁻¹.bar⁻¹ (unmasked)

0.04-2000 g.m⁻².24h⁻¹.bar⁻¹ (masked)

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Conventional Models

PermeH₂O

Water Vapour Transmission Rate - WVTR

PermeO₂

Oxygen Transmission Rate - OTR

PermeCO₂

Carbon Dioxide Transmission Rate – CO₂TR

PermeO₂RC - Economical

Oxygen Transmission Rate - OTR

Features – Permeation Products

- ✓ Fully Computer Controlled
- ✓ Single Cell or Two Cell Models
- ✓ Temperature Control 10 – 50 °C (+/- 0.1 °C)
- ✓ Humidity Control from 5 to 95% (+/- 1.5%)
- ✓ 100% Humidity Mode
- ✓ 0% Humidity Mode (for O₂ & CO₂)

- ✓ Allows sample thickness up to 2.5 mm
- ✓ Automatic Flow Control (10 – 75 ml/min)
- ✓ Unique Closure System—No need to cut samples !
- ✓ Data storage & Graph Storage for viewing later on
- ✓ LABVIEW based latest Software



Packaging adapter



Aluminum surface reducing

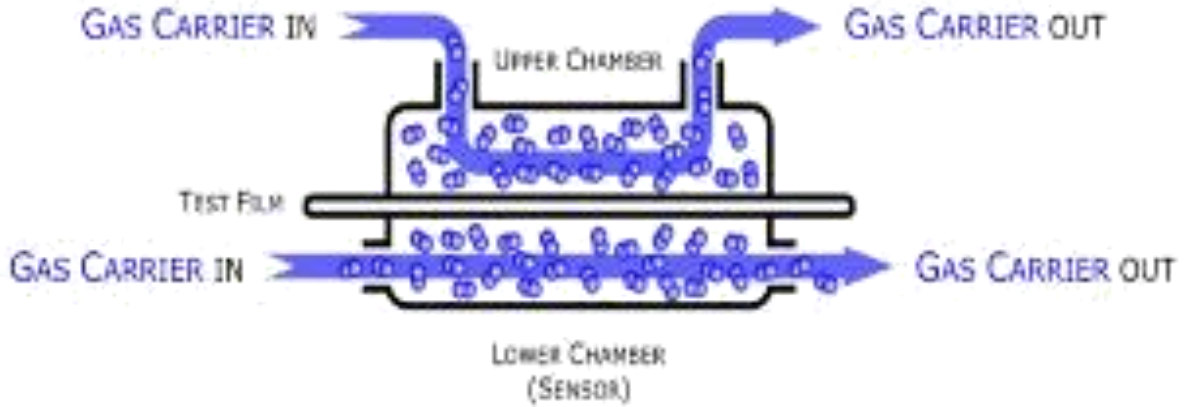
PackPerm - for Packages
Oxygen Transmission Rate – OTR

CarboPackBT
for Carbonated Beverage Bottles
Carbon Dioxide Transmission Rate
CO₂TR

*Gives result in an Hour
which normally takes weeks !!!*



Fully Computer Controlled

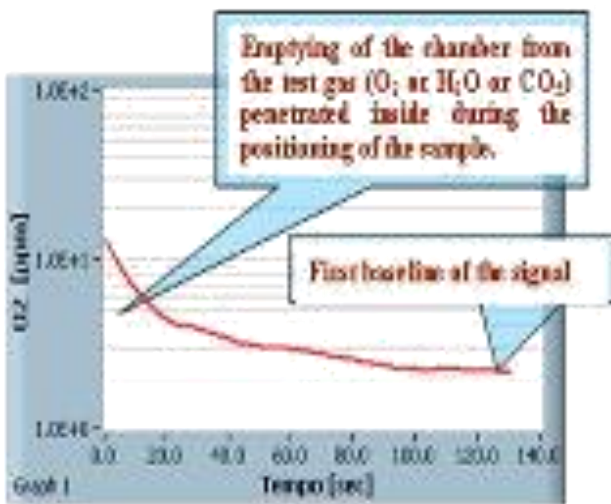


Purging Phase

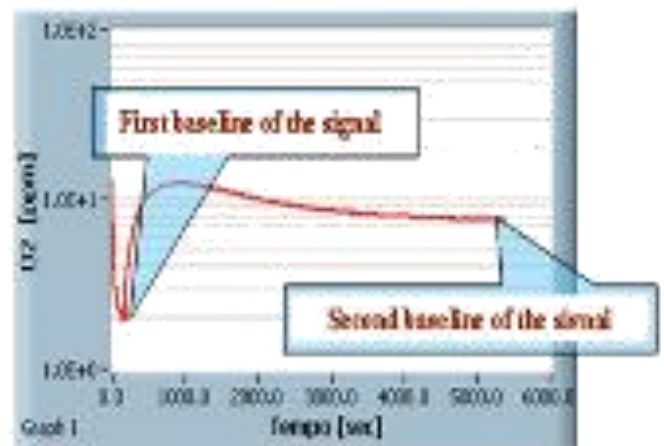
Zero Phase

An electronic controlled nitrogen flow starts flowing in both the chambers (purging phase). Residual traces of gas (O_2 or CO_2 or H_2O) present in the chamber are swept away by the carrier gas and transported to the sensor.

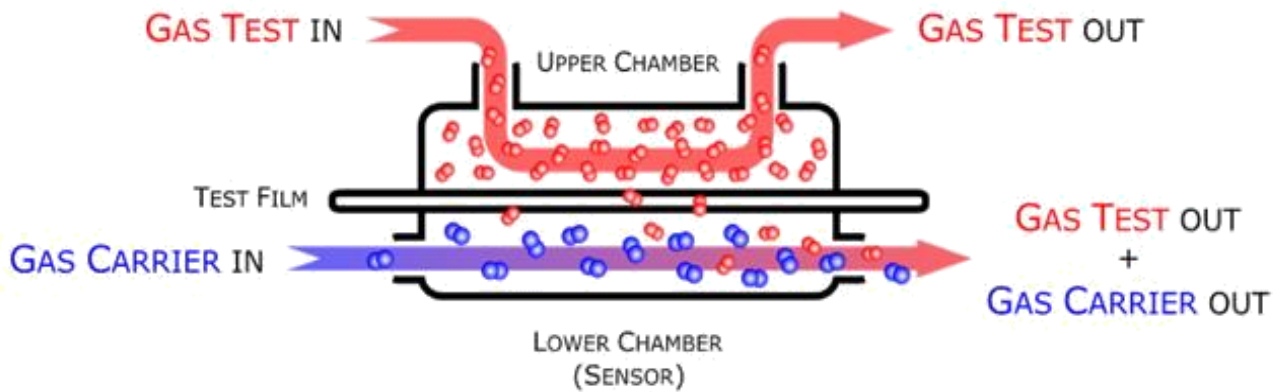
An electronic controlled nitrogen flow starts flowing in both the chambers (purging phase). Residual traces of gas (O_2 or CO_2 or H_2O) present in the chamber are swept away by the carrier gas and transported to the sensor.



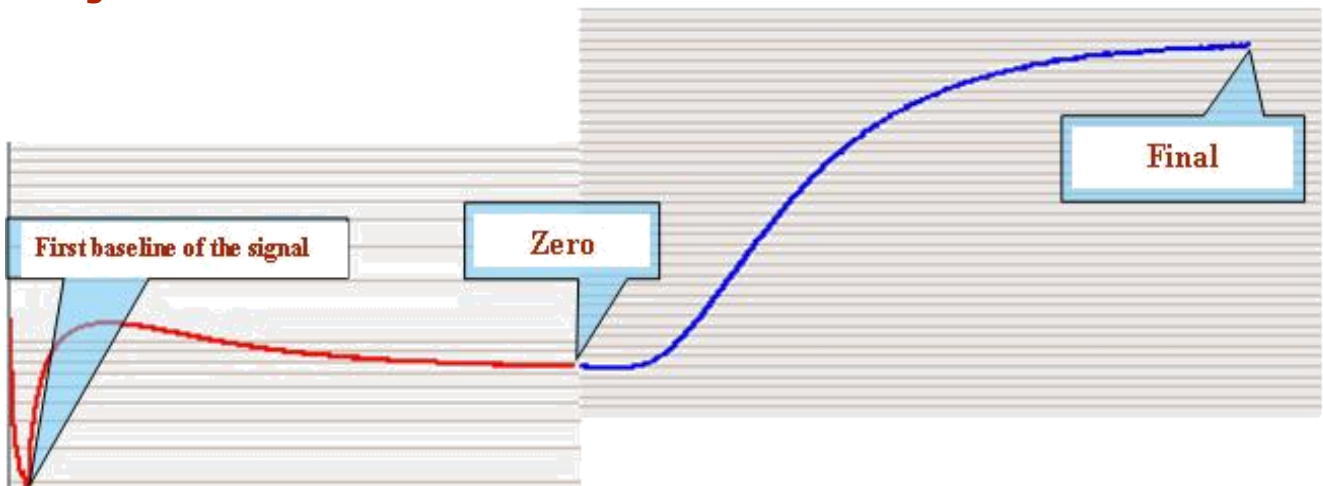
The graph shows a decreasing curve until it stabilizes to a value of plateau.



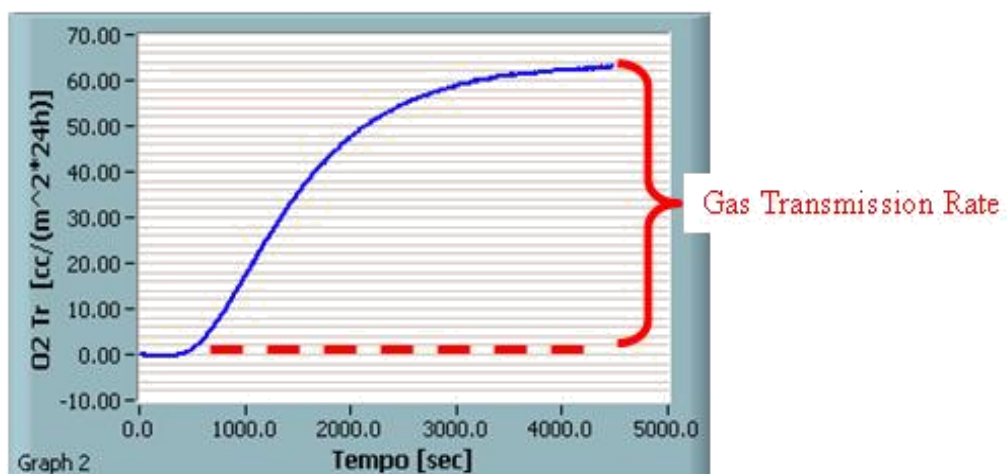
The graph shows an increasing curve and again a new plateau.



At this point the pure test gas (O_2 or CO_2 or H_2O) starts flowing in the upper chamber. Test gas permeates through the sample and the carrier gas brings it along to the sensor.

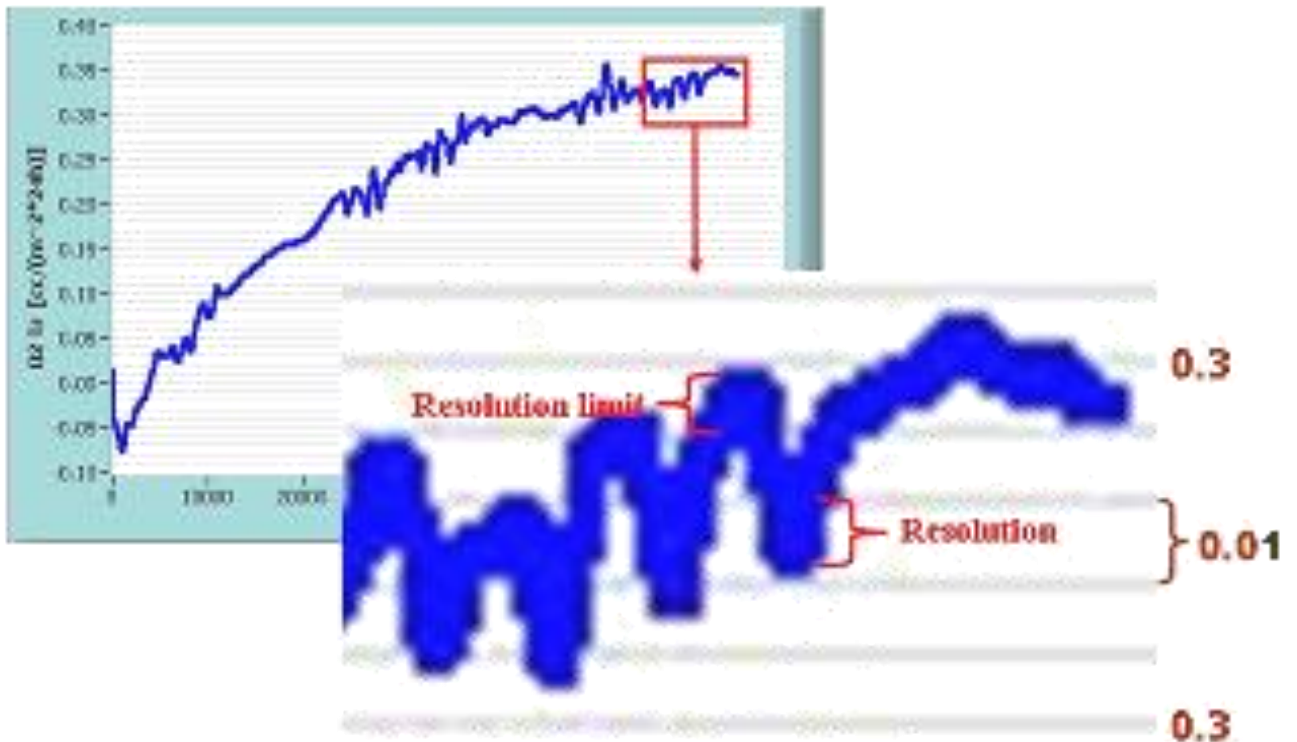
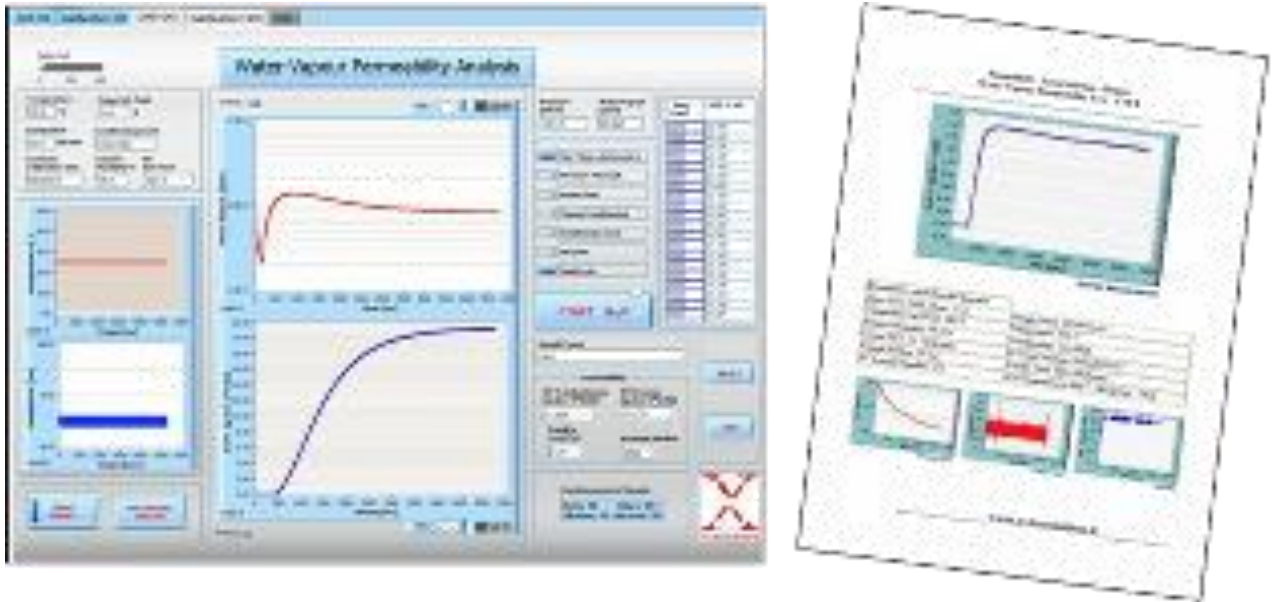


The final plateau indicates that an equilibrium between the gas permeation through the film and the transportation of the permeated molecules to the sensor has been reached.



The software automatically calculates the difference between the two values and transforms the result into standard units (e.g. $cm^3/(m^2 \cdot day \cdot bar)$).

USER FRIENDLY SOFTWARE (NI LABVIEW PLATFORM)



Every minor tick on Y axis has an amplitude of 0.01

Resolution limit is the value at which the signal-to-noise ratio (SNR) is 1.

In this graph there is a fluctuation (peak to peak) of around 0.05 on a measurement of around 0.35 in the last 10000 sec for OTR.

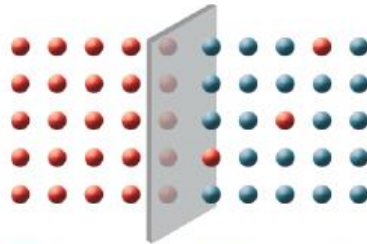
Test Films and Packages



ExtraSolution

by

The Art of Permeation



PermTech

Italy

Authorised Agent



HEM TECHSYS
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