

Y204D Oxygen & Water Vapor Dual Mode Permeation Tester



Note :
Due to keeping innovation,
the specification and
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Introduction

This tester can be used to do high-precision oxygen permeability and water vapor permeability testing of film or sheet at the same time;

It adopts Coulometry theory for oxygen permeability test, and adopt international advanced electrolytic process theory for water vapor permeability test;

It is applicable for testing the oxygen transmission property and water vapor transmission property of plastic film, sheet and plastic bottles and bags etc. packaging containers in air or pure oxygen;.

Execution technical standard for oxygen permeability: GB/T 19789-2005, ASTM D 3985-1995, ASTM F 1927-1998, ASTM F 1307-1990, YBB00082003, ISO 15105-2:2003, DIN 53380-3-1998, JIS K-7126 ;

Execution technical standard for water vapor permeability: ASTM F1770, ASTM D1653-03, ASTM E96-00e1, ISO15106-3, JIS Z0208-1976, DIN 53122-1, ISO2528.

Testing principle

It adopts Coulometry theory;

The testing chambers including upper and nether parts, the sample film is fixed between the two chambers, the high pure oxygen (O₂) circulate in the upper chamber of the film, and the high pure nitrogen (N₂) circulate in the nether chamber of film, the oxygen molecules get through the film and spray to nitrogen in the nether chamber, and brought by the blowing nitrogen to the sensor, so, the tester then analyze the oxygen concentration as what the sensor tested and calculate the oxygen transmission value. But for the packing containers, the nitrogen circulate in the bottle and the air or oxygen circulate outside the container

For water vapor permeability testing;

It is made according to the electrolytic process theory;

The testing chambers including upper and nether parts, the sample film is fixed between the two chambers, water vapor circulate in the upper chamber of the film, and dry gas circulate in the nether chamber of film, water molecules get through the film and spray to dry gas in the nether chamber, and brought by the blowing gas to the sensor, so, the tester then analyze the water vapor concentration as what the sensor tested and calculate the water vapor transmission value.

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Technical parameters

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|---------------------------------|--|
| 1) Oxygen testing range | : 0.02~16500 cm ³ / m ² / day (with largen the test chamber, the max testing range can reach 260000cm ³ /m ² •day) |
| 2) Oxygen test accuracy | : 0.001 cm ³ / m ² / day |
| 3) Humidity test range | : 0.02 ~ 10,000 g/m ² . 24h |
| 4) Humidity test accuracy | : 0.001g/m ² . 24h |
| 5) Temperature control range | : 5~50°C |
| 6) Temperature control accuracy | : ±0.01°C |
| 7) Humidity control range | : dry degree = 0%RH, Humidity=5~95%RH , 100%RH |
| 8) Humidity control accuracy | : ±1%RH |
| 9) Specimen size | : Φ80mm , transmission area 50.24cm ² , no international standard about area |
| 10) Specimen no | : 4 pcs |
| 11) Specimen thickness | : ≤2mm |
| 12) Test environment condition | : room temperature (standard temperature is 23°C) |
| 13) Pressure | : 0.2~0.3MPa |
| 14) Cut air interface | : 1/8 inch |

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Features

It can be used to test feeble oxygen permeability and feeble water vapor permeability. Oxygen permeability test according to the Coulometry theory, and water vapor permeability test according to electrolytic process theory. And the chambers can be used to do oxygen permeability test or water vapor permeability test independently.

The chambers can be added to 30 chambers . some can be used to test oxygen permeability and some to test water vapor permeability.

Use international advanced electromagnetic temperature control technology, so rising and lowering temperature can be easily operated by program steps without any external accessory.. Temperature control accuracy reach 0.01°C

The humidity control adopt double air humidity control method, humidity control area is large and with high accuracy, humidity flow is stable, it avoid faults such as the big volume and more faults of plugins humidity generator;

It has two calibration methods of standard gas calibration and standard film calibration. The testing accuracy reach international advanced level, and it ensure the exact testing result.

It has the functions of double cavity pressure control and automatic pressure balance.

It can judge and stop automatically ;

It has leakage auto protection function;

The software operation is easy, all testing program is automatic. It records the curves automatically of the permeation rate, oxygen concentration, humidity and temperature and so on. and continuous display. It can monitor the mutual influence between the parameters, and it can monitor the testing process;

The functions are independent modules. The functions of testing , baselines and calibration and so on are independent. It has good ability of data analysis, and its operation is very easy;

It can be used to test high permeability shaped film (such as contact lenses etc.) with additional testing fixture

It can also be used to test the oxygen permeability of packaging bags or bottles with special fixture.

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Operation interface

It has good function of data analysis, so it can identify the fluctuation caused by the external factors and can mark and eliminate, all tested data can be saved in the database automatically. Testing dates are intercepted by separate time and showed by relative wave graph, finally form a testing report for user to analysis.



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Configuration

One host computer, one set of special testing software, one pair of cable, one sample cutter, 1/8 inch copper tube 5m.

The user preparations

Oxygen (99.999%), Nitrogen (99.999%), one bottle of high pure gas, one reducing valve, one computer.

Function and usage

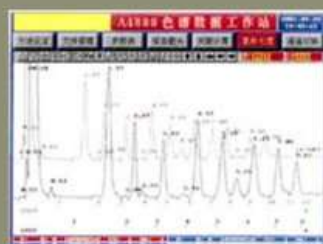
Gas chromatography carries out the quantitative analysis and peculiar smell testing for residual solvent on food packaging cases after printing;
Test the pureness and quality of organic solvents.

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Features

1. With higher ratio of function and reasonable price, economic and efficient
2. The design of the cellular integral structure is convenient for installation.
3. It can be connected to the chromatogram data work station so as to greatly improve the working efficiency.
4. With FID detector
5. With the flexible design of the packed column and capillary column injection ports.
6. Packed column and capillary column sample injectors can be selected as per actual situations. Wide column box (300×300×200mm)
7. In order to meet complicated analytic task, it makes use of various chromatographic columns so as to offer convenience and widen the range of the analytic samples. The advanced noise suppression system can fully eliminate the fan noise under the chromatogram working state, so as to provide you a comfortable and quiet working atmosphere.
8. The sampling device is completely vitrified with two modes of rapid vaporizing and column sample injection.
9. Bran-new pressure stabilization and various air circuit system
10. The air circuit has three different kinds of forms: Single, double and triple. It can match six-way valve, blow back, and pre-cut equipment and so on according to the users' demands. It adopts new type pressure regulation system to ensure the re-productivity of equipment.
11. Reforming furnace can be equipped to implement microanalysis of CO and CO₂.
12. Cracking furnace can be equipped to do double eight-step temperature rise with microcomputer control, man-machine conversation and simple application.
13. Advanced temperature control system
14. Adopt microcomputer control and man-machine conversation to indicate various needed temperatures of the temperature column box.
15. Column box temperature control scope: (room temperature +10°C) - 400°C, eight-step temperature rise.
The speed is 0 - 30°C/min (increase 0.1°C/min), and the temperature control precision is 0.1%.
The control point number is eight points of A type with control scope (room temperature +10°C) - 400°C.
16. Overheat protection function
It can freely set temperature within 400°C with software program protection, and the hardwired connection adopts dual fail-safe design

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Specification reference

	Thermal conductivity detector (TCD)	Hydrogen flame ionization detector (FID)	Electron capture detector (ECD)	Flame-photometric detector (FPD)	Nitrogen and phosphorous detector (NPD)
Sensitivity	$S \geq 5000 \text{ mv.ml/mg (benzene)}$	$M \leq 1 \times 10^{-11} \text{ sec}$	$M \leq 2 \times 10^{-13} \text{ g/ml (r-666)}$	$M_s \leq 5 \times 10^{-11} \text{ g/sec (thiophene)}$ $M_p \leq 1 \times 10^{-11} \text{ g/sec (1605)}$	$M_n: 1 \times 10^{-13} \text{ g/sec}$ $M_p: 1 \times 10^{-13} \text{ g/sec}$
Noise	$\leq 0.02 \text{ mv}$	$\leq 1 \times 10^{-14} \text{ A}$		$\leq 2 \times 10^{-12} \text{ A}$	

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