C370H Water Vapor Transmission Rate Test System

C370H Water Vapor Transmission Rate Test System is designed and manufactured based on the gravimetric method and in accordance with ASTM E96 and GB 1037. The test system provides wide-range and high-efficiency water vapor transmission rate tests for films and containers used in pharmaceutical packaging. It is also suitable for testing the water vapor permeability properties of films, containers, sheet materials, paper, fabrics, non-wovens, and related materials in food, medical device, daily chemical, and new energy sectors, etc.



Product Features [Note 1]

Accurate Data

- 360° air circulating constant temperature technology ensures a stable testing environment.
- Imported high-precision temperature and humidity sensors and control system monitor real-time temperature and humidity changes.
- Pneumatic chamber-sealing design automatically isolates the test chamber from the weighing chamber, preventing the effects of high temperature and humidity on the balance.
- Centered three-dimensional purge design ensures consistent air flow distribution over the test dishes, eliminating local deviations.
- Standard air flow rate maintains a constant humidity difference between the inside and outside of the test dishes; selectable air flow rates are available.
- Chamber-type fog-free humidification system eliminates the need for an internal humidifier.
- German touchscreen electronic balance reaches a repeatability up to 0.3mg.
- External weight calibration is available for convenient measurement.

Professional & Efficient

- Tests of desiccant method and water method can be performed.
- Tests of films and containers can be performed.
- Screw-off test dishes, if the optional B2260 is installed, can realize automatic quantitative liquid addition and tightening.

- Automatic zero reset before weighing ensures accurate measurements every time.
- Cylinder lift and rotation mechanism and intermittent weighing effectively reduce system errors.
- The 45L test chamber volume accommodates testing of containers of varying heights.
- Independent testing of 6 or 9 test dishes with respective display of results.

Intelligent Control

- 10.6" medical-grade touchscreen, allowing the host to operate independently.
- Fully automatic testing requires no manual intervention, and the data are stored automatically.
- Wide-range, high-precision and automatic temperature and humidity control allows for easy implementation of non-standard tests.
- Platform-based software allows synchronous control of multiple hosts with centralized data management.
- Multiple sensors provide intelligent alerts for safer operation.
- Built-in Ethernet port for direct Internet connection realizes remote control and system upgrading.
- Professional computer software meets GMP data traceability requirements and pharmaceutical industry compliance needs.
- Multi-level operation permission management, configurable on demand.
- Electronic signature is designed in accordance with 21 CFR Part 11.

Test Principle

A pre-treated specimen is sealed in a test dish containing water or desiccant and placed in a test chamber. The test chamber automatically generates and maintains a stable temperature, humidity, and airflow environment based on specified test conditions. Water vapor diffuses through the specimen to the dry side. A high-precision balance measures the changes in the test dish's weight over time, and calculates the specimen's water vapor permeance value and other results.

Reference Standards

ASTM E96, GB/T 1037, GB/T 16928, ASTM D1653, ISO 2528, TAPPI T464, DIN 53122-1, YBB00092003

Test Applications

Basic Applications	Films	Water vapor transmission rate tests of various plastic films, plastic composite films, paper-plastic composite films, co-extruded films, metalized films, aluminum foil composite films, glass fiber aluminum foil paper composite films and other film materials.
	Containers	Water vapor transmission rate tests for various pharmaceutical packaging bottles, pouches, Tetra Pak packaging, three-piece cans, cosmetic packaging, toothpaste tubes, jelly cups, yogurt cups and other bottles, pouches, cans, boxes and barrels made of plastic, rubber, paper, paper-plastic composite, glass and metal.
	Sheet Materials	Water vapor transmission rate tests of sheet materials such as PP sheet, PVC sheet, PVDC sheet, metal foil, rubber sheet, etc.
	Paper, paperboard and related composite materials	Water vapor transmission rate tests of paper and paperboard such as aluminized paper of cigarette packages and paper-aluminum-plastic composite sheets.
	Textiles and non-woven fabrics	Water vapor transmission rate tests of textiles, non-woven fabrics and other materials.
Extended Applications	Building Materials	Water vapor transmission rate tests of geotextiles, felts, thermal insulation felts, thick sheet waterproof and thermal insulation building materials, etc.
	Sterile Wound Dressing, Medical Plaster Patch	Water vapor transmission rate tests of sterile wound dressings, medical plasters, etc.

Technical Parameters

Table 1: Test Parameters Note 2

	Parameter Model	C370H
Test Ranges	g/(m²·day)	0.1～10,000 (Water Method) Note 3

		0.1 to 2500 (Desiccant Method) Note 3
Balance Range	**g**	220
Balance Resolution	**mg**	0.1
Balance Repeatability	**mg**	0.3
Temp. Range	**℃**	15～50
Temp. Fluctuation	**℃**	±0.2
Humidity Range	**%RH**	10～90%±2%
Extended Functions	**21 CFR Part11**	Optional
	GMP computer system requirements	Optional

Table 2: Technical Specifications

Test Stations	6
	9 (as per customization)
Test Method	Desiccant Method and Water Method
Specimen Types	Films, Containers Note 4
Air Flow Rate	0.02~0.3m/s, 0.5~2.5m/s
Specimen Size	Φ2.9” (74mm)
Specimen Thickness	≤120 Mil (3mm)
Test Areas	33cm^2
	50cm^2 (optional)
Container Size	≤Φ70 mm×180mm (customized)
Gas Specification	Compressed air (gas source is to be provided by the user)
Gas Source Pressure	72.5 PSI / 500 kPa
Port Size	Φ8 mm polyurethane tube

Host Dimensions	29" H x 23" W x 30" D (73cm × 57cm × 76cm)
Power Supply	120VAC ± 10% 60Hz / 220VAC ± 10% 50Hz (select one from the two)
Net Weight	187Lbs (85kg)

Table 3: Product Configuration

Standard Configuration	Host, electronic balance, air dryer (maintenance-free), pressure reducing filter valve, precision water vapor test dishes (6 pieces), disassembly tools for water vapor test dishes, power cord, Φ8 mm polyurethane tube
Optional Items	Software, GMP computer system requirements, 21 CFR Part 11, air compressor (with a flow rate of ≥200L/min), precision water vapor test dishes, B2260 tightening device for water vapor dishes

Note 1: The product features are based on the specific specifications in the "Technical Parameters" table.

Note 2: All parameters in the tables were measured in the Labthink laboratory by professional operators in accordance with relevant laboratory environmental standards and conditions.

Note 3: Maximum range = maximum range / n, of which n can be 1 to 6 (pieces).

Note 4: Test accessories for container specimen need to be customized corresponding test to the specimen size.

✧ Labthink is committed to innovation and improvement of product performance and functionality. For this reason, product specifications are subject to change without prior notice. The company reserves the right to modify and make final interpretations.