

PERME[®] W3/330 Water Vapor Transmission Rate Test System

Professional, High Efficiency and Intelligent WVTR Test System

Professional

This instrument is designed for the determination of water vapor transmission rate of film and package specimens. It has three test modes and is applicable to various materials with high, medium and low water vapor permeability. It is also embedded with high precision electrochemical sensor, which provides a wide test range of 0.001~1000 g/m²•24h and durable service life.

- Wide range and high precision of temperature and humidity control to support various combinations of non-standard test conditions
- Standard, proportional and continuous testing modes facilitate to minimize errors caused by human factor during testing process
- Convenient fast-access calibration port for temperature and humidity
- Reference film for accurate calibration



High Efficiency

W3/330 system is based on the electrolytic sensor method and utilizes Labthink's latest exclusive patent design of three diffusion cells integrated in one instrument for individual or multiple tests, which improves test efficiency by 3 times. It can be easily connected with 9 satellite bases to accomplish up to 30 tests at the same time.

- 3 diffusion cells integrated in one instrument with lower space occupancy rate and higher test efficiency
- 3 distinct or equivalent specimens can be tested individually with independent test results at one operation
- The system can be easily connected to a maximum of 10 instruments to accomplish up to 30 tests at the same time
- Water vapor transmission rate and oxygen transmission rate can be obtained at one operation by working with Labthink's oxygen transmission rate test system together under the control of one computer

Intelligent

The instrument adopts Labthink's latest operating software with user-friendly operating interface and intelligent data management. It also supports Lystem[™] Lab Data Sharing System, which ensures uniform data management of test results and test reports.

- Based on the user-friendly Windows operating interface for easy operation
- Saves test data in different formats for convenient data transfer
- Intelligent historical data searching, comparing, analyzing and printing functions
- Supports Lystem[™] Lab Data Sharing System for uniform management of test results and test reports

Test Principle

The test specimen is mounted in the diffusion cell, which is subsequently divided into a dry chamber and a



controlled-humidity chamber. The dry side of the specimen is swept by a flow of dry nitrogen, and the water vapor permeating through the specimen from the controlled-humidity chamber is carried by dry nitrogen to the electrolytic sensor where proportion electrical signals will be generated. The water vapor transmission rate is obtained by analyzing and calculating the electrical signals. For package samples, dry nitrogen flows inside the package, and moisturized nitrogen flows outside.

This test instrument conforms to the following standards:
ISO 15106-3, GB/T 21529, DIN 53122-2, YBB 00092003

Applications

This instrument is applicable to the determination of water vapor transmission rate of:

Basic Applications	Films	Including plastic films, plastic composite films, paper-plastic composite films, coextruded films, aluminized films, aluminum foils, aluminum-foil composite films, glass fiber with aluminum foil composite films and many others
	Sheeting	Including various sorts of engineering plastics, rubber and building materials, e.g. PP, PVC and PVDC
	Paper, Paper Board and Composite Paper Materials	Including paper and paper board, e.g. aluminized paper for cigarette packages and paper-aluminum composite materials
	Packages	Including plastic, rubber, paper, paper-plastic composite, glass, and metal packages, e.g. Coke bottles, peanut oil packages, Tetra Pak materials, vacuum bags, metal three-piece cans, soft tube packages for cosmetic and toothpaste, and jelly cups
Extended Applications	Package Caps	Test seal performance of different package caps
	LCD Monitor Films	Including LCD monitor films
	Solar Back-Sheets	Including solar back-sheets
	Plastic Packages for Drugs and Health Care Products	Test water vapor transmission rate of plastic bottles for drug and health care products, e.g. eye drop bottles, infusion bags and health care product packages
	Plastic Pipes	Including various sorts of pipes, e.g. PPR
	Blister Packs	Test water vapor transmission rate of the whole blister packs
	Aseptic Wound Protecting Films and Medical Plaster Patches	Test water vapor transmission rate of aseptic wound protecting films, medical plaster patches and other materials
	Fuel Tanks of Cars	Plastic fuel tanks are widely used in cars for its light weight, buffering vibration and easy molding characters. But its fuel permeability is the most essential factor. This instrument can be used to test permeability of plastic fuel tanks
	Battery Plastic Shell	Battery electrolyte is protected by the plastic shell from outside environment. Battery service life is directly depended on its water vapor permeability. This instrument can be used to test water vapor transmission rate of battery plastic shell



Paper Cups and Bowls	Test water vapor transmission rate of the whole packages for instant noodles and disposable paper cups
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Technical Specifications

Specifications	Film Test	Package Test (customization available)
Test Range	0.001 ~ 40 g/(m ² ·24h) (standard) 0.01 ~ 1000 g/(m ² ·24h) (optional)	0.0001 ~ 0.2 g/(pkg·24h)
Number of Specimens	1~3 with independent test results	
Resolution	0.001g/(m ² ·24h)	0.00001 g/(pkg·24h)
Temperature Range	15°C ~ 55°C (standard)	
Temperature Accuracy	±0.1°C (standard)	
Humidity Range	0%RH, 35%RH ~ 90%RH, 100%RH	
Humidity Accuracy	±1% RH	
Specimen Thickness	≤ 3 mm	/
Test Area	50 cm ²	/
Specimen Size	108 mm x 108 mm	One package with temperature control device: specimen should be smaller than Φ180 mm and lower than 380 mm
		Three packages with temperature control device: specimens should be smaller than Φ100 mm and lower than 380 mm
		No size limitation for tests without temperature control device
Carrier Gas	99.999% high purity nitrogen (outside of supply scope)	
Carrier Gas Flow	100 mL/min	
Carrier Gas Pressure	≥0.28 MPa	
Port Size	1/8 inch copper tubing	
Instrument Dimension	690 mm (L) x 350 mm (W) x 360 mm (H)	
Power Supply	220VAC 50Hz / 120VAC 60Hz	
Net Weight	70 kg	

Configurations

Standard Configurations	Instrument, Professional Software, Communication Cable, Vacuum Grease, Diamond Sample Template, Valve Set and Sponge Cushion
Optional Parts	Satellite Base, Accessories for Package Test, Temperature Control Device, Reference Film, Seal Accessories for Package, Sample Cutter and Vacuum Grease
Note	1. The gas supply port of this instrument is 1/8 inch copper tubing; 2. Customers will need to prepare for gas supply and distilled water.