

PERME[®] W3/230 Water Vapor Transmission Rate Test System

Professional, High-efficiency and Intelligent WVTR Test System

Professional

W3/230 Water Vapor Transmission Rate Test System 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 infrared sensor, which provides a wide test range of 0.1~1000 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 test different materials with distinct water vapor permeability
- Convenient fast-access calibration ports for temperature and humidity
- Reference film for fast and accurate calibration



High Efficiency

W3/230 system is based on the infrared 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.

- Embedded computer control system provides safer and more reliable data management as well as test operation.
- Three diffusion cells are integrated in one instrument with lower space occupancy rate and higher test efficiency
- Three distinct or equivalent specimens can be tested individually with independent test results at one operation
- The instrument can be easily operated with a mouse, a keyboard, and a monitor, without requiring a PC
- The instrument is equipped with four USB ports and dual Internet ports for convenient data transmission.

Intelligent

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

- Intelligent designs for test result evaluation, sensor calibration reminding, tracing or managing operation record provide a safe and easy operation environment
- Embedded help document is convenient for user viewing
- Detailed information for each test can be saved through embedded database storage technology, and users could view historical test data in various patterns.

Test Principle

Infrared method is used by W3/230 Water Vapor Transmission Rate Test System:
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 infrared 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 15106-2, ASTM F1249, GB/T 26253-2010, TAPPI T557, JIS K7129

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 and many others
	Sheeting	Including engineering plastics, rubber, building materials and other sheet materials, e.g. PP, PVC and PVDC
	Paper and Paper Board	Including paper and paper board, e.g. aluminized paper for cigarette packages and paper, plastic and aluminum composite materials
	Packages	Including plastics, 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	WVTR test of LCD monitor films
	Solar Back-sheets	WVTR test of 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	Blister packs for pharmaceutical products
	Aseptic Wound Protection Films and Medical Plasters	Including aseptic wound protection films and medical plasters
	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 Shells	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

Technical Specifications

Specifications	Film Test	Package Test (Optional)
Test Range	0.01 ~ 40 g/m ² ·24h (Standard) 0.1 ~ 1000 g/m ² ·24h (Optional)	0.0001 ~ 0.2 g/pkg·d
Specimen Size	108 mm x 108 mm	Temperature control for one package test: <Φ180 mm, Height< 380 mm
		Temperature control for three package test: < Φ100 mm, Height< 380 mm
		No size limitation for tests without temperature control device
Number of Specimen	3 with independent test results	
Specimen Thickness	≤3 mm	/
Test Area	50 cm ²	/
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	
Carrier Gas	99.999% high-purified nitrogen (outside of supply scope)	
Flow of Carrier Gas	0 ~ 200 mL/min	
Pressure of Carrier Gas	0.28 MPa/40.6 psi	
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, LCD Monitor, Keyboard, Mouse, Precision Pressure Regulator, Gas Inlet Pipe and Connector, Diamond Sample Template, Vacuum Grease and Sponge Cushion
Optional Parts	Accessories for Packaging Test, Temperature Control Device, Reference Films, Package Mouth Sealing Accessories, Sample Cutter, Vacuum Grease and Printer (compatible with PCL3)
Note	1. The gas supply port of the instrument is 1/8 inch copper tubing; 2. Customers will need to prepare for gas supply and distilled water.