C360M Water Vapor Transmission Rate Test System

C360M Water Vapor Transmission Rate Test System, is designed and manufactured based on the gravimetric determination method and conforms to the requirements of ASTM E96. This instrument can be used to measure the water vapor transmission rate of barrier materials with high, medium and lower moisture barrier properties with a wide testing range and high testing efficiency. The instrument features Labthink's patented test chamber design with multiple test dishes. C360M is equipped with precision made test dishes, highly accurate balance, embedded professional software which supports automatic controlling of temperature, humidity and flow rate precisely and guarantees the testing sensitivity and repeatability of the test results. C360M is applicable to determination of water vapor permeability of plastic films, sheeting, paper, packages and other packaging materials in food, pharmaceutical, medical apparatus, building materials and consumer goods, etc.

High Precision

- Patented test chamber and test dishes with advanced fluid dynamics and thermodynamic designs.
- Labthink's proprietary thermostat technology ensures that the test chamber is precisely temperature controlled and remains stable throughout the test.
- Precise and scientific regulation and calculation of testing conditions.

High Efficiency

- 6 test stations
- Supports test modes of desiccant method and water method

Labor Saving

- Automatic humidity and flow rate controlling.
- Desiccator requires no replacement of inner core.
- High-efficiency water vapor generator.

Simplified Operation

- 12'' touch-screen pad powered by Windows™ 10 system.
- Fast automatic testing process.
- DataShield™ for automatic data management.

Product Features [Note3]

- **New Generation Test Chamber and Test Dishes**

  Patented test chamber and test dishes with advanced hydrodynamic and thermodynamic designs ensure the uniform flow rate over the specimen surface, stable temperature and humidity, creating a uniform and stable testing environment. As a result, the test duration is shortened and the test results will be more accurate.

- **Excellent Testing Abilities of High and Low Barrier Materials**

  The testing conditions will be regulated precisely in real time, which ensures the high testing accuracy and repeatability of high and low barrier materials.

- **Automatic Controlling of Temperature, Humidity and Air Velocity**

  Labthink's proprietary thermostat technology ensures that the test chamber is precisely temperature controlled and remains stable throughout the test.

  Air velocity is monitored and regulated in real time.

  High-efficiency and mist-free automatic humidity regulator meets the requirements for long-term continuous tests.

  It is unnecessary to replace the inner core of the desiccator, which can continuously work for 20,000 hours.

- **Easy-to-use and High-efficiency System**

  The automatic test mode, combined with the instrument features, eliminates the need for manual adjustments to quickly obtain accurate results, saving training costs and releasing staff from manual monitoring so that they are available for other tasks.

  The professional test mode provides flexible and rich instrument control functions to meet individual scientific research needs.

  Unique, optional DataShield™ system facilitates centralized management of user data. It supports a variety of formats of exported data. Reliable security algorithms are used to prevent data leakage. It supports universal wired and wireless LAN, optional private wireless network and third-party software.

- **User-oriented Service Concept**

  Adhering to our user-oriented service concept, Labthink has created a customization system that provides flexible and comprehensive customization services for the accommodation of non-standard specimens and packages.

Test Principle

The test specimen is mounted in the test dish which contains water or desiccant inside. The test dish is placed in the test chamber with stable temperature, humidity and air flow. The water vapor permeates through the specimen and into the dry side. By measuring the weight changes of the test dish periodically, water vapor transmission rate and other parameters can be obtained.

Test Standards

ASTM E96, ASTM D1653, ISO 2528, TAPPI T464, DIN 53122-1, GB 1037, GB/T 16928, YBB 00092003

Applications[Note3]

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

Basic Applications	Films	Plastic films, plastic composite films, paper-plastic composite films, coextruded films, aluminum coated films, aluminum foil composite films, glass fiber aluminum foil paper composite films and many other film materials
	Sheeting	PP, PVC and PVDC sheeting, metal foils, rubber pads and other sheeting materials
	Paper and Paper Board	Aluminum coated paper for cigarette, paper aluminum plastic composite film and other paper and paperboards
	Textiles and Nonwovens	Textiles and nonwoven fabrics
Extended Applications	Construction Materials	Geotextiles, felt, roofing and building materials, vapor barrier membranes, etc.
	Aseptic Wound Protection Films and Medical Plasters	Aseptic wound protecting films, medical plasters and protective clothing materials

Technical Specifications

Table 1: Test Parameters[Note1]

Parameter		Model C360M
Testing Efficiency	**0.01g/(m² · day)~0.5g/(m² · day)**	＞24 hours
	0.0006g/(100in² · day)~0.0323g/(100in² · day)	
	0.5 g/(m² · day)~5 g/(m² · day)	12~24 hours
	0.0323g/(100in² · day)~0.3225g/(100in² · day)	
	＞5 g/(m² · day)	≤8 hours
	＞0.3225 g/(100in² · day)	
Max. Test Range	**Water Method**	10000/n（1-6）g/(m²·day)
		645/n（1-6）g/(100in²·day)
	Desiccant Method	1200g/(m²·day) per piece
		77g/(100in²·day) per piece
Test Station		6
Test Temperature	℃	20~55±0.2
Test Humidity	**RH**	10%~90%±1%
Additional Functions	**DataShield™ Note2**	Option
	Computer System required by GMP	Option
	CFR21 Part11	Option

Table 2: Technical Specifications

Specimen Size	Φ74mm
Specimen Thickness	≤3mm
Test Method	Desiccant Method / Water Method
Standard Test Area	33cm^2
Carrier Gas	Compressed Air
Drying of Carrier Gas	Long Service-life Desiccator (unnecessary to replace inner core)
Humidifying of Carrier Gas	High-efficiency mist-free humidity generator
Carrier Gas Pressure	≥0.6 MPa
Port Size	Φ6mm PU Tubing

Note 1: The parameters in the table are measured by professional operators in Labthink laboratory under strictly controlled laboratory conditions..

Note 2: DataShield™ provides safe and reliable data application support. Multiple Labthink instruments can share one single DataShield™ system which can be configured as required.

Note3: The described product features should be in line with Table 1: Test Parameters.

Please Note: Labthink is dedicated to the innovation and improvement of product performance and function. Therefore, technical specifications are subject to change without further notice. Labthink reserves the rights of final interpretation and revision.