

## GTR-G3 Gas Permeability Tester

### Brief Introduction

GTR-G3 Gas Permeability Tester is based on the differential pressure method, and is professionally applicable to the determination of gas transmission rate (GTR) as well as solubility coefficient, diffusion coefficient and permeability coefficient of plastic films, composite films, high barrier materials, sheeting, aluminum foils, rubber, tire and permeable membrane.



### Technical Features

#### Advanced Technology

- ◆ Three distinct or equivalent specimens could be tested individually with independent test results at one operation
- ◆ Imported high-precision vacuum sensor and pressure sensor are used to effectively ensure the test accuracy of the instrument
- ◆ The world's first water bath temperature control system can realize automatic temperature control and a wider temperature control range
- ◆ Realize the independent temperature control of the upper and lower chambers and sensors, which effectively guarantees the accuracy of the test results
- ◆ Self-developed sealed piping system reduces system errors and makes test results more accurate
- ◆ Unique sample anti-leakage structure design, sample sealing is more stable
- ◆ With automatic pressure holding function, which can adjust the pressure of the upper chamber in real time during the test to ensure the constant pressure difference between the upper and lower chambers during the measurement process
- ◆ External 2-in-1 PAD, with professional operating system, the entire experiment process

is automatically completed, and the results are automatically displayed

- ◆ With high-speed vacuuming capability, more thorough degassing, short test cycle and high efficiency

## High Configuration

- ◆ Two test modes: proportional mode and standard mode
- ◆ The system has self-checking capability to ensure that the equipment is in normal test state at any time
- ◆ Gas transmission rate, solubility coefficient, diffusion coefficient and permeability coefficient of the specimen could be obtained at one operation
- ◆ Test range could be extended based on user requirements to test the materials with high permeability
- ◆ Imported components make the operation of the instrument more stable and reliable
- ◆ Reference film for fast calibration to ensure accurate and universal test data
- ◆ With automatic save function after power failure
- ◆ Standard RS232 port for convenient data transfer
- ◆ The whole testing process is monitored, automatically recorded, and can be reproduced in the whole process

## Test Principle

The pre-conditioned specimen is mounted in the gas diffusion cell as to form a sealed barrier between two chambers. The lower-pressure chamber is firstly evacuated, followed by the evacuation of the entire cell. A flow of gas is thereafter introduced into the evacuated higher-pressure chamber and a constant pressure difference is generated between two chambers. The gas permeates through the specimen from the higher pressure side into the lower side. The gas permeability and other barrier properties of the specimen can be obtained by monitoring the pressure changes in the lower chamber

## Applications

<b>Basic Applications</b>	<b>Films</b>	Including plastic films, plastic composite films, paper-plastic composite films, coextruded films, aluminized films, aluminum foils, aluminum foil composite films and many others
	<b>Sheeting</b>	Including engineering plastics, rubber and building materials, e.g. PP, PVC and PVDC
<b>Extended Applications</b>	<b>Petrochemical</b>	Including transportation pipelines, such as MDPE plastic CO <sub>2</sub> testing
	<b>Various Gases</b>	Test the permeability of various types of gases, e.g. O <sub>2</sub> , CO <sub>2</sub> , N <sub>2</sub> , Air and He
	<b>Inflammable, Explosive Gases</b>	Test the permeability of inflammable and explosive gases

<b>Biodegradable Films</b>	Test gas permeability of various sorts of biodegradable films, e.g. starch-based biodegradable bags
<b>Materials for Aerospace Usage</b>	Test the Helium permeability of airship gas bags
<b>Paper and Paper Board</b>	Test gas permeability of paper and paper-plastic composite materials, e.g. aluminized paper for cigarette packages, Tetra Pak sheeting, paper bowls for instant noodles and disposable paper cups
<b>Paint Films</b>	Test gas permeability of substrates coated paint films
<b>Glass Fiber Cloth and Paper</b>	Including glass fiber cloth and paper materials, e.g. Teflon paint cloth, Teflon welding cloth and Teflon silicon rubber cloth
<b>Soft Tube Materials for Cosmetics</b>	Including various types of cosmetic tubes, aluminum-plastic tubes and toothpaste tubes
<b>Rubber Sheeting</b>	Including various sorts of rubber sheeting, e.g. car tires
<b>Vacuum Packaging</b>	Including vacuum packaging manufacturing sheets that are easily susceptible to gas oxidation and corrosion, such as electronic products, such as consumable sensors, etc.

**Technical Specifications**

<b>Item</b>	<b>GTR-G3</b>
<b>Test Range</b>	0.05 ~ 50,000 cm <sup>3</sup> /m <sup>2</sup> ·24h·0.1MPa (standard volume) At least 500,000 cm <sup>3</sup> /m <sup>2</sup> ·24h·0.1MPa (extended volume)
<b>Number of Specimens</b>	3 (with independent test results)
<b>Number of Sensors</b>	3

<b>Test Mode</b>	3 chambers independent
<b>Vacuum Resolution</b>	0.1 Pa
<b>Vacuum Degree of Test Chamber</b>	<20 Pa
<b>Test Temperature</b>	5°C ~ 95°C ±0.1°C (dry gas at standard atmospheric pressure)
<b>Temperature Accuracy</b>	±0.1°C
<b>Air Pressure</b>	0.1 MPa ~ 0.8 MPa
<b>Test Gas</b>	O <sub>2</sub> , N <sub>2</sub> and CO <sub>2</sub> (outside of supply scope)
<b>Carrier Gas Interface</b>	Φ6
<b>Vacuum Pipe Diameter</b>	1/4"
<b>Correction Method</b>	Standard film calibration, external calibration of vacuum sensor
<b>Specimen Thickness</b>	≤3mm
<b>Specimen Size</b>	Φ97 mm
<b>Test Area</b>	38.48 cm <sup>2</sup>
<b>Instrument Dimension</b>	740 mm (L) x 415 mm (W) x 430 mm (H)
<b>Power Supply</b>	AC 220V 50Hz
<b>Net Weight</b>	50 kg

## Standards

GB/T 1038, YBB 00082003, ASTM D1434, ISO 2556, ISO 15105-1, JIS K7126-A

Technical specifications are subject to change without further notice. Please visit our website at [www.horizontester.com](http://www.horizontester.com) for latest information.