VAC-V2 (EX) Gas Permeability Tester is based on the differential pressure method, and is professionally applicable to the determination of gas transmission rate of common gases as well as toxic, flammable or explosive gases. It is suitable for determination of gas transmission rate, solubility coefficient, diffusion coefficient and permeability coefficient of plastic films, composite films, high barrier materials, sheeting, and aluminum foils at varied temperatures.



Professional Technology

- Labthink advanced split control system is applied to realize complete separation of the tester mainframe and control module so as to ensure testing safety.
- The tester is suitable for gas transmission rate determination of flammable, explosive or toxic gases.
- The tester has passed TUV safety certification.
- Three independent test cells can test three identical or different samples simultaneously.
- Gas transmission rate, permeability coefficient, solubility coefficient and diffusion coefficient are determined simultaneously.
- Wide-range & high-precision liquid circulation temperature controller can satisfy tests under varied test conditions.
- Dual testing process judgment patterns are available: Proportional Mode and Fuzzy Mode.
- The testing range can be extended according to the needs to meet the requirements for tests of high transmission rate materials.
- Data fitting at any temperature can be performed; test results under extreme conditions can be obtained easily.
- PC-controlled, and the whole test process can be accomplished automatically.
- Reference film is available for rapid calibration to ensure the accuracy and versatility of the test data.
- RS232 universal data port is equipped to facilitate data transfer.
- The tester is compatible with Lystem™ Laboratory Data Sharing System with unified management of test results and test reports.

Test Principle

VAC-V1 (EX) Gas Permeability Tester is designed based on the differential-pressure method. The pre-conditioned sample is mounted in between the upper testing chamber and lower testing chamber and clamped. First, the lower-pressure chamber (i.e., lower testing chamber) is evacuated, followed by the evacuation of the entire system. When the desired vacuum degree is achieved, close the lower testing chamber and test gas of a certain pressure is flushed to the higher pressure chamber (upper testing chamber), and a constant pressure difference (adjustable) is generated between the two testing chambers. The gas permeates through the sample from the high pressure side into the low pressure side due to pressure gradient. The gas permeability parameters of the sample can be obtained by monitoring the pressure changes in the lower testing chamber.

The tester conforms to a variety of national and international standards: ISO 15105-1, ISO 2556, GB/T 1038-2000, ASTM D1434, JIS K7126-1, and YBB 00082003.

Test Applications

Basic Applications	**Films**	It is applicable to gas permeability tests of all kinds of plastic films, plastic composite films, paper-plastic composite films, coextruded films, aluminum foils, aluminum foil composite films and other film materials.
	Sheeting	It is applicable to gas permeability tests of a variety of engineering plastics, rubber, building materials and other sheeting materials, such as PP sheeting, PVC sheeting, PVDC sheeting, etc
Extended Applications	**Different Gases**	It is applicable to the peremability test of a variety of gases, such as O_2, CO_2, N_2, Air, He, etc.
	Flammable & Explosive Gases	It is applicable to the film barrier performance tests of flammable and explosive gases
	Bio-	It is applicable to gas permeability tests of bio-degradable films, such

degradation Films	as starch biodegradable pouches, etc.
Materials for Aerospace Usage	It is applicable to gas permeability tests of aerospace materials, such as helium transmission rate test of airbags for airships.
Paper & Cardboard	It is applicable to the gas permeability tests of paper and paper-plastic composite materials, such as aluminum foils for cigarette packaging, Tetra Pak packaging sheeting, paper bowls for instant noodles, disposable paper cups, etc
Paint Films	It is applicable to the gas permeability tests of paint coating on the substrates.
Glass Fiber Cloth & Glass Fiber Paper, etc.	It is applicable to the gas permeability tests of glass fiber cloth, glass fiber paper and other materials, such as Teflon lacquer cloth, Teflon high temperature cloth, fluorine silicone cloth, etc.
Sheeting for Cosmetic Tubes	It is applicable to gas permeability tests of all kinds of sheeting for cosmetics tubes, aluminum plastic tubes, toothpaste tubes, etc.
Rubber Sheeting	It is applicable to gas permeability tests for all kinds of rubber sheeting, such as gas permeability tests of automobile tires.

Technical Specifications

Item	Film Test
Test Range	0.05 to 50,000 $cm^3/m^2 \cdot 24h \cdot 0.1MPa$ (Common)
	Upper limit is not less than 500,000 $cm^3/m^2 \cdot 24h \cdot 0.1MPa$ (Extended volume)
Number of Samples	3 pieces (with respective data)
Vacuum	0.1 Pa

Resolution	
Test Cell Vacuum Degree	≤10 Pa
Temp. Control Range	5℃～95℃
Temp. Fluctuation	±0.1℃
Sample Size	Φ97 mm
Test Area	38.48 cm^2
Test Gases	H_2, N_2, O_2, CO_2, etc. (Gas sources are to be provided by users)
Test Pressure	10 kPa ~ 200 kPa (Common)
Gas Source Pressure	0.5 MPa～0.6 MPa
Port Size	Φ6mm Polyurethane tube
Dimensions	760 mm (L) × 575 mm (W) × 450 mm (H)
Power Supply	AC 220V 50Hz
Net Weight	88 kg

✧ For users with special needs, Labthink can conduct customized production for users within the scope of our capacity to meet their needs.

Product Configuration

Standard Configuration	mainframe, thermostat controller, professional software, special sampler, vacuum grease, fast quantitative filter paper, vacuum pump (inlet)
Optional Parts	Sampling blade, vacuum grease, vacuum pump oil, fast quantitative filter paper
Note	The air source port of this tester is a Φ 6 mm polyurethane tube; the gas source is provided by the users.

✧ Labthink is always 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 revision and final interpretation.

Labthink Instruments Co., Ltd. 144 Wuyingshan Road, Jinan, P.R.China (250031) Phone: +86-531-85068566 FAX: +86-531-85062108
Labthink International, Inc. 200 River's Edge Drive, Medford, MA, 02155, U.S.A. Phone: +1-617-830-2190 FAX: +1-781-219-3638
www.labthink.com