AIR/GAS/VAPOUR PERMEABILITY MASUREMENT SET-UP

MATMT-Series

Introduction:

MAPMT series of air/gas/moisture permeability/diffusion coefficient measurement set up are available in more than eight different models virtually offering measure, ment solutions to textile fabric, paper, polymers, cosmetic, foam, leather, PVC, wood, cotton, insulator material, laminates, filters, cosmetic fins, civil items, food items etc. It can effectively measures static/dynamic permeability of pour size varying from 1.0 to 100.0 micron measured for either air or any other gas or vapour.ranging under varied temperature, humidity conditions.These permeability meters are offered in material like SS-316 (ceramic/Teflon coating), polypropylene, derelin etc to make up with corrosion, thermodynamical and other pertinent physical parameters of fluid/gas under measurement. On account of above, these permeability meters are first choice for medical diagnostic, agro, biomedical, petrochemical, automobile, organic/inorganic chemical, milk plant, sugar, textiles, beverages, water management/treatment, academic and defense.

Operating Principle: Constant gas flow rate at a specified pressure is passed through fabric and flow sensor with very negligible windage losses/high fluid pressure in comparision to permeability of fabric under test. differentoial pressure across sample fabric varies as a function of vapour/gas flow rate/porosity, temperature .The ratio of diferential pressure to flow rate gives correct indication of permeability. Permeability may vary depending upon pulsation in flow, moisture, and tribological behaviour of pore of fabric, S.P.M. content in gas or its thermal content.

Jp = Dp Δp/RTt. **Dp: diffusion constant of vapour through air, Δp: the drop in the pressure in the membrane, R: gas constant, T: absolute temperature, t: membrane thickness.**

P = ε/τ Dm Δp/RTt… **Dm: experimental factor of vapour diffusion through the membrane, and P: membrane permeability coefficient. D_P: The coefficient of vapour diffusion through air, ε: the membrane porosity/ τ: the path tortuosity factor**

Differential air pressure sensor

MATMT-050

MATMT-0020

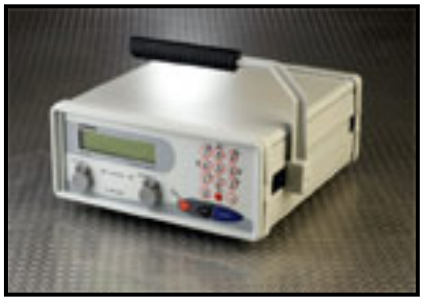
ELECTRICAL/MECHANICAL SPECIFICATIONs OF Gas/Liquid Permeability Analyzers:

Low pressure/low fow:

MODEL	Pressure psi	Flow range 10^{-3}Litre/min	Permeability range Gmsx10^{-4}/m s Pa	Pore size Min/max Dia-micro	Accuracy / Repeatability	Sample material/area/thickness	Permeability Analyzers tube-Liner	Leak rate
MATTM-00011	0.01-1.000	0.0001.0-0010.0	009.999	0.1-50/option	99.9/100	Option/½/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00021	0.01-1.000	0.0001.0-0010.0	09.9999	0.1-50/option	99.9/100	Option/3/4/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00041	0.01-1.000	0.0001.0-0010.0	99.9999	0.1-50/option	99.9/100	Option/1.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00071	0.01-1.000	0.0001.0-0010.0	999.999	0.1-50/option	99.9/100	Option/1.5/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00101	0.01-1.000	0.0001.0-0010.0	999.999	0.1-50/option	99.9/100	Option/2.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00201	0.01-1.000	0.0001.0-0010.0	999.999	0.1-50/option	99.9/100	Option/3.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00501	0.01-1.000	0.0001.0-0010.0	999.999	0.1-50/option	99.9/100	Option/4.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-01001	0.01-1.000	0.0001.0-0010.0	999.999	0.1-50/option	99.9/100	Option/6.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-02001	0.01-1.000	0.0001.0-0010.0	999.999	0.1-50/option	99.9/100	Option/8.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10

General electrical/mechanical specifications:

Operating voltage: 220 volt A.C. (50-20,000 Hz)/ 12 volts D.C.
Measurement range (full scale): as above in different model.
Permeability resistance range: 1.9999 Pa x sec / c.m. 10^{-9}/10^{-12}/10^{-15}100 ampere AC/DC (optional)
Gas flow rate :0. 1-0.5 m.m./sec
Operational humidity: 10-100%
Operational temperature: -10 °C to +60 °C
Suction capacity: 0.2 - 2.0 c.m./sec
Pressure of gas source: 0.4MPa~0.6Mpa
Transmission area: 38.48cm² (diameter 70mm)
Sample size: 1.0x1.0/ 2.0x2.0 cm²
Response time: 1000 sample/sec
Pressure drop Burden: less than 100 micro1.9999 Pa x sec / c.m or better
Accuracy: 0.5/1.0/2.0 % reading
Repeatability: 100 of reading
Resolution: 1/5 count and may be altered based on time behaviour of signal
Linearity adjustment: upto 100 count
Input imedence: ultra low (<1000 count),
Filtering: low pass (adjustable) /Offset: variable upto 10,000 count (manual/auto)
CMMR: >80 db at 50-60 Hz/Isolation: > 100 giga ohm
Connector: BNC-9 pinx2 and BNC-25 pinx2
Size: 5X8X8 inches/rack mounted or portable/RS-232 / ADDITIONAL SOFTWARE to plot T/Rh/Permeability, fabric thickness.



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ULTRA-PRECISION PERMEABILITY MASUREMENT SET-UP

MATTM-Series

Electrical/Mechanical Specification Gas/Liquid Permeability Analyzers : low pressure /high flow:

MODEL	Pressure psi	Flow range Litre/min	Permeability Analyzers range Gmsx10^{-4}/m s Pa	Pore size Min/max	Accuracy / Repeatability	Sample material/area/thickness	Permeability Analyzers tube-Liner	Leak rate
MATTM-00012	0.01-1.000	0.01.0-0100.0	009.999	0.05-0.5/option	99.9/100	Option/½/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00022	0.01-1.000	0.01.0-0100.0	09.9999	0.05-0.5/option	99.9/100	Option/3/4/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00042	0.01-1.000	0.01.0-0100.0	99.9999	0.05-0.5/option	99.9/100	Option/1.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00072	0.01-1.000	0.01.0-0100.0	999.999	0.05-0.5/option	99.9/100	Option/1.5/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00102	0.01-1.000	0.01.0-0100.0	999.999	0.05-0.5/option	99.9/100	Option/2.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00202	0.01-1.000	0.01.0-0100.0	999.999	0.05-0.5/option	99.9/100	Option/3.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00502	0.01-1.000	0.01.0-0100.0	999.999	0.05-0.5/option	99.9/100	Option/4.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-01002	0.01-1.000	0.01.0-0100.0	999.999	0.05-0.5/option	99.9/100	Option/6.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-02002	0.01-1.000	0.01.0-0100.0	999.999	0.05-0.5/option	99.9/100	Option/8.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10

Electrical/Mechanical Specification Gas/Liquid Permeability Analyzers: High Pressure/low flow:

MODEL	Pressure psi	Flow range 10^{-3}Litre/min	Permeability Analyzers range Gmsx10^{-4}/m s Pa	Pore size Min/max Micron-diameter	Accuracy / Repeatability	Sample material/area/thickness	Permeability Analyzers tube-Liner	Leak rate
MATTM-00013	001.0-100.0	0.0001.0-0010.0	009.999	0.05-0.5/option	99.9/100	Option/½/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00023	001.0-100.0	0.0001.0-0010.0	09.9999	0.05-0.5/option	99.9/100	Option/3/4/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00043	001.0-100.0	0.0001.0-0010.0	99.9999	0.05-0.5/option	99.9/100	Option/1.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00073	001.0-100.0	0.0001.0-0010.0	999.999	0.05-0.5/option	99.9/100	Option/1.5/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00103	001.0-100.0	0.0001.0-0010.0	999.999	0.05-0.5/option	99.9/100	Option/2.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00203	001.0-100.0	0.0001.0-0010.0	999.999	0.05-0.5/option	99.9/100	Option/3.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00503	001.0-100.0	0.0001.0-0010.0	999.999	0.05-0.5/option	99.9/100	Option/4.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-01003	001.0-100.0	0.0001.0-0010.0	999.999	0.05-0.5/option	99.9/100	Option/6.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-02003	001.0-100.0	0.0001.0-0010.0	999.999	0.05-0.5/option	99.9/100	Option/8.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10

ELECTRICAL/MECHANICAL SPECIFICATIONs OF Gas/Liquid Permeability Analyzers High Pressure/High flow:

MODEL	Pressure psi	Flow range Litre/min	Permeability Analyzers range Gmsx10^{-4}/m s Pa	Pore size Min/max	Accuracy / Repeatability	Sample material/area/thickness	Permeability Analyzers tube-Liner	Leak rate
MATTM-00014	001.0-100.0	0.01.0-0100.0	009.999	0.1-50/option	99.9/100	Option/½/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00024	001.0-100.0	0.01.0-0100.0	09.9999	0.1-50/option	99.9/100	Option/3/4/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00044	001.0-100.0	0.01.0-0100.0	99.9999	0.1-50/option	99.9/100	Option/1.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00074	001.0-100.0	0.01.0-0100.0	999.999	0.1-50/option	99.9/100	Option/1.5/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00104	001.0-100.0	0.01.0-0100.0	999.999	0.1-50/option	99.9/100	Option/2.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00204	001.0-100.0	0.01.0-0100.0	999.999	0.1-50/option	99.9/100	Option/3.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-00504	001.0-100.0	0.01.0-0100.0	999.999	0.1-50/option	99.9/100	Option/4.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-01004	001.0-100.0	0.01.0-0100.0	999.999	0.1-50/option	99.9/100	Option/6.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10
MATTM-02004	001.0-100.0	0.01.0-0100.0	999.999	0.1-50/option	99.9/100	Option/8.0/1.0-5.0	Silo-Ceramic-rubber	<1.8x10

Company may dedicate instruments to meet specific requirement. / **NOTES: The numeral after product code indicates the permeability to be measured**

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