



GAS DIFFUSION ANALYZER



Not just Products.... Solutions !

DESCRIPTION

The Gas Diffusion Analyzer is used to determine the transport of various gases through sheet-like materials under a wide range of static and dynamic conditions, which in turn, can be used to simulate real-world applications. The instrument is equipped with a mass spectrometer in order to detect low transfer rates, which permits testing under small gradients of concentration, pressure, or temperature. This instrument is ideal for small and even delicate sheet-like materials such as fabrics, films, laminates, papers, plastics, and boards of thicknesses below 1.25 inches. The versatility and convenience of this instrument make it the optimal research tool for characterizing the dynamic properties of your material under both standard and non-standard conditions.

PRINCIPLE

The basic principle is that when a gas stream containing a particular gas species flows below as well as above a sample at a steady rate, transport of that species through the sample can occur due to an imposed concentration, pressure, or temperature gradient. A mass spectrometer measures the concentration of the gas species at the inlet and outlet streams of the sample chamber. Using the measured concentration difference between the inlet and outlet, the mass transfer quantity can be calculated.

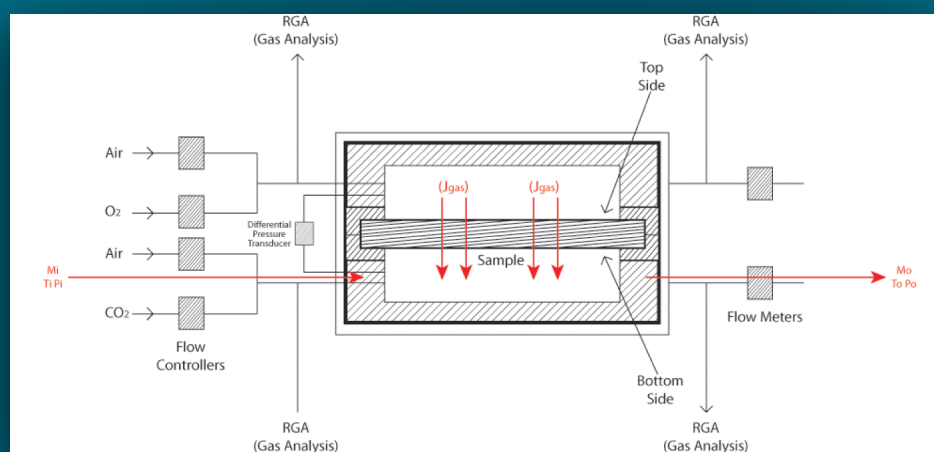
$$J_{\text{gas}} = \frac{C_o M_o - C_i M_i}{A}$$

J_{gas} = Flux of Gas Species through the sample (scc/min * cm)

M_i, M_o = Volumetric Flow Rate of Inlet & Outlet, respectfully (scc/min) on the low concentration side of the sample

A = Area (cm²)

Once the mass transfer quantity is computed, the Average Gas Concentration Difference can also be determined. This value represents the materials ability to maintain a difference in gas concentration from one side of the sample to the other under the specified flow conditions.



SPECIFICATION

Gas Concentration Measurement :

- *Lowest Detectable Partial Pressure: 1×10^{-14} mbar*
- *Mass Range: 1-100 amu; 1-200 amu; 1-300 amu*
- *Resolution: 0.5 - 2.5 amu*
- *Lowest Detectable Concentration: 0.1PPM (± 10 PPB accuracy)*

Volumetric Flow Rate Measurement :

- *Maximum Total Flow Rate: 530 scc/min ($\pm 1\%$ accuracy)*
- *Maximum Test Gas Flow Rate: 30 scc/min ($\pm 1\%$ accuracy)*

Differential Pressure Measurement :

- *Range: ± 1335 Pa (± 5 Pa)*

Temperature Measurement :

- *Range: -10° - 100° C ($\pm 0.5\%$)*

Gas	Temperature (°C)	Humidity	Concentration Difference (%)	Transfer Rate (scc/min -cm ²)
O ₂	24	48.3	2.3872	0.2464
CO ₂	24	48.3	1.7278	0.1428

FEATURES

Flow Ability to create a wide range of testing conditions, including :

- *Rate/Residence Time*
- *Static or Dynamic Pressure Gradients*
- *Static or Dynamic Temperature Gradients*

Versatile & User-Friendly software for :

- *Fully Automated Tests*
- *Manual Control of all System Components*
- *Data Collection, Storage, Analysis, & Reporting*
- *Customized Testing Parameters*

Applicable for Wide variety of Sheet-like materials

High Measurement speed, stability, & resolution

Interchangeability of System Components

Durable Stainless Steel Construction

*The most advanced, accurate, easy to use
and reproducible porometers in the world*

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