FlowSorb III 2305/2310

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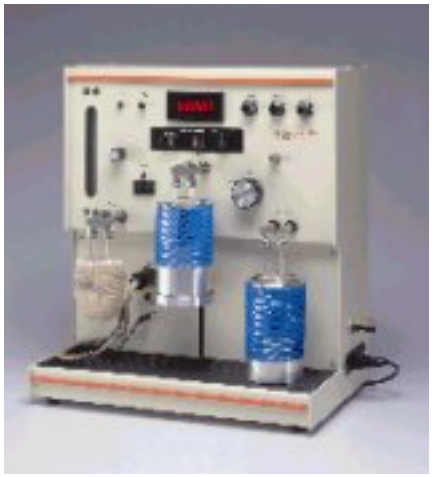

Description

The FlowSorb III 2305/2310 provides singlepoint and multipoint BET surface area measurements with speed, accuracy and reliability. Samples having surface areas from 0.01 m^2 /g to over 1,000 m
2
/g are easily accommodated. The FlowSorb III's reproducibility is better than 0.5%.

Features

- Ultra-stable detector eliminates drift and need for constant readjustment.
- Cold trap conveniently located in front vs. side placement, as in other instruments. This placement reduces the chance of breakage as compared to side placement.
- Single injection calibration requires only one control setting. Adaptable to any non-corrosive adsorbate mix.
- All controls and displays are at eye/arm level, out of spill zone.
- Built-in sample preparation.
- The FlowSorb III 2310 features a built-in dewar elevator for completely automated analysis and rewarming fan for rapidly warming the sample tube to increase the speed of sample analysis. The thermal conductivity detector eliminates temperature-induced drift resulting in highly repeatable results.
- Single injection calibration provides fast start-up and high sample throughput.
- Specially designed sample holders can be attached and removed from the instrument with one hand. These quick connect/disconnects have a built-in isolation valve to prevent sample contamination.
- The FlowSorb III 2305 features a dewar support latch system that provides one-hand convenience and safeguards against LN $_2$ spills.
- Simple in design, the FlowSorb III requires minimal training time and leaves little chance for operator error.
- Automatic mode switching for adsorption and desorption is accomplished without operator attention.
- Five different types of sample tubes are available including a monolith type tube for large samples.
- Cold trap conveniently located in front rather than on the side, as with other instruments. This placement reduces the chances of breakage and saves bench space.

Accessories

- Separate preparation device (DeSorb 2300A) for high throughput.
- 5 different types of sample tubes including monolith type for large samples.
- Flow controller for operator adjustable gas mixtures.

- Data reduction software for computer aided calculations.

Analysis Technique

The surface area of granulated and powdered solids or porous materials is measured with the FlowSorb III by determining the quantity of a gas that adsorbs as a single layer of molecules, a so-called monomolecular layer, on a sample. This adsorption is done at or near the boiling point of the adsorbate gas. Under this condition, the area covered by each gas molecule is known within relatively narrow limits. The area of the sample is thus calculable directly from the number of adsorbed molecules, which is derived from the gas quantity at the prescribed conditions, and the area occupied by each.

For a nitrogen and helium mixture of 30 volume percent nitrogen, conditions most favourable for the formation of a monolayer of adsorbed nitrogen are established at atmospheric pressure and the temperature of liquid nitrogen. Parameters defining the conditions at which the monolayer forms are incorporated in the multipoint analysis result by the data treatment. Atmospheric pressure and ice water temperature may establish appropriate conditions for a n-butane and helium mixture. Other gases at other conditions are also usable.

In general, a surface area result obtained by the multipoint method using nitrogen as the adsorbate is somewhat more reliable than a single point one, and nitrogen gas is preferable over other gases. Unless special circumstances dictate, nitrogen is recommended.

Specification

Applicability: Surface Area: 0.1 m^2
Specific Surface Area: Approximately 0.01 m^2 /g (minimum

Accuracy/Reproducibility: Low Specific Surfaces: Typically better than ±3% (single point metho
Moderate-to-high specific surfaces: Typically better than ±2% (single point method); ±1.5% (multipo
System Capacity: Sample Holder Volume: 4.8cm^3

Physical: Dimensions:
46.5W x 53H x 30.5D cm (18.3W x 20.9H x 12D in.)
FlowSorb III 2305: Weight: 18 kg (40 lbs)

FlowSorb III 2310: Weight: 20 kg (44 lbs)

Degas System: Temperature Range: Ambient to 400°C
Selection: Digitally set, 1°C increments
Accuracy: Deviation less than ±10°C of set point at thermocouple

Environment: Temperature: 15-30°C (59-90°F) operating; 0-50°C (32-122°F) stori
Humidity: 20-80% relative (non-condensing)

Electrical : Voltage: 100,115,230 VAC ±10%
Frequency: 50/60 Hz
Power: 240 VA, operating (maximum)

Gases: Mixtures of helium with nitrogen, argon, $k_{I\,2}$