

Product Name :
Fixed Bed Adsorption Educational Lab Demo Unit

Product Code :
ALABS-A174-001



Description :

Fixed Bed Adsorption Educational Lab Demo Unit

- A benchtop unit comprising a vacuum formed ABS plastic plinth with integral electrical console onto which is mounted the stainless steel, packed fixed bed adsorption column, hot water circulation system and infrared detector.
- The hot water circulator system connected to the column jacket allows automatic control of temperature adsorption to a set point value.
- Gas feed flow rate can be controlled between 0 and 5 l/min.
- The Bed Adsorption column has the following specifications:
 - Height 325 mm, diameter 58 mm
 - Stainless steel jacket for temperature control
 - Gas distribution plate at entry to column

- Bed of glass beads for good gas distribution and maintenance of steady-state temperature
- Six thermocouples spaced evenly along the length of the column
 - All electrical circuits are protected by appropriate safety devices.
 - The control console incorporates an electronic display: PID controller display, including the set-point temperature.
 - USB interface and sophisticated data logging software are included.

Description:

The introduces students to the fundamentals of adsorption and desorption processes using a packed bed reactor. The unit is fitted with a stainless steel reactor column in which the adsorbent, activated carbon, is packed.

There are six thermocouples sited along the length of the column, which enable the adsorption/desorption fronts to be followed (Adsorption/desorption of CO₂ leads to changes in temperature).

A hot water circulation system, also containing a thermocouple (T7), is connected to the jacket of the column to enable accurate temperature control via a PID temperature controller so that the desired processing temperature is accurately maintained.

The system is equipped with all the valves required for flow direction control, flow rate control and pressure relief for safety.

Electronic flowmeters monitor the flow rate of both the carrier gas, helium and the absorbate, carbon dioxide. These combined with the column temperature sensors and the IR detector, for measuring CO₂ concentration; enable the processes to be followed closely and a wide range of operating variables to be examined.

Technical Details:

Operation pressure: 0-0.5 bars

Gas flow rates: 0 < 5 SLPM (He), 0 < 1 SLPM (CO₂)

Column capacity: 480 cm³

Gases: CO₂, He

Relief valve pressure: 20 psi

Column operating temperature: 25 – 45°C



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