

Educational Rotary Disc Liquid-Liquid Extraction Pilot Plant

Item Number: LPK-BEXT



Introduction

A transparent rotary disc column for educational liquid-liquid extraction experiments. This pilot plant enables students to study mass transfer, droplet dynamics, and flooding behavior, bridging theory and practice in chemical engineering unit operations education. Features variable-speed agitation and PLC control.

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Parameter	Specification
Column Configuration	Rotary disc extraction column with alternating stator rings and rotor discs
Column Material	High-borosilicate transparent glass
Frame Material	Industrial-grade anodized aluminum alloy with lockable casters
Physical Dimensions	≤ 1480 mm × 580 mm × 1800 mm (Length × Width × Height)
Agitation Control	Variable-speed rotor motor with digital speed display and adjustment
Process Control Interface	Integrated PLC workstation with a color digital display for process variable monitoring

Laboratory Module	Core Teaching Focus	Textbook Concepts & Unit Operations
Hydrodynamic Characterization	Direct observation of droplet breakup, phase distribution, and determination of the flooding velocity.	Continuous and dispersed phases, phase holdup, and flooding limits in agitated columns (<i>Unit Operations of Chemical Engineering</i>).
Mass Transfer Performance	Calculation of mass transfer coefficients, solute concentration profiles, and overall extraction efficiency.	Liquid-liquid equilibria, solute distribution coefficients, and extraction stage efficiency (<i>Transport Processes and Unit Operations</i>).
System Modeling & Scaling	Determination of the Height of a Transfer Unit (HTU) and Number of Transfer Units (NTU) under variable rotor speeds and feed ratios.	Design equations for continuous-contact equipment, operating lines, and mass transfer correlation (<i>Chemical Engineering Design</i>).