

Product Name :
Liquid-Liquid Extraction Unit

Product Code :
NEECHL0240



Description :

Liquid-Liquid Extraction Unit

Technical Specification :

This plant consists of a liquid-liquid extraction column of glass with rotating discs installed aside a distillation column.

This last column can be used to recover the solvent used for the extraction, or separately for the study of distillation process.

This unit enables to develop and analyze the following subjects:

Extraction

- Determination of the number of transfer units
- Height of a transfer unit
- Extraction efficiency
- Mass balance
- Calculation of mass transfer coefficient
- Calculation of the number of theoretical stages
- Trend of concentrations along the column
- Exercises on systems of 3 partially mixable components:

Distillation

- Recovery of the solvent used in the extraction
- Distillation of different mixtures (water / ethanol, water / methanol, methanol / propanol, etc...) versus the variation of the following operational parameters: - reflux ratio - feeding flow rate - reboiler heating power - feeding composition
- Flooding Technical Characteristic required:
- Framework of stainless steel with castors
- 5 tanks of stainless steel , with capacity of 20 L
- Extraction column of borosilicate glass consisting 26 stages, $h = 1500$ mm, and including a disc stirrer of stainless steel, 2 separators of borosilicate glass and variable speed motor (0 to 1000 rpm)
- 2 metering pumps of stainless steel , with flow rate of 0-40 L/h
- Distillation column of borosilicate glass with vacuum jacket
- Reflux head of borosilicate glass
- Solenoid valve for controlling the reflux ratio
- Reboiler of stainless steel, with capacity of 7 L, for the distillation column
- Electric heater of stainless steel, $P = 3000$ W
- Thyristor unit for controlling the electric heater
- 2 timers for controlling the reflux ratio
- Overhead condenser of borosilicate glass with exchange surface of 0.3 m^2

- Flowmeter for the water feeding the head condenser, with range of 20 to 250 L/h
- 3 thermoresistances Pt 100 with sheath of stainless steel
- 3 board-type electronic digital temperature indicators
- Tube-in-tube heat exchanger of stainless steel : for cooling of column outlet product and for cooling of distillate
- Tank of borosilicate glass, with capacity of 3 L, for collecting the column outlet product
- Graduated tank of borosilicate glass, with capacity of 1 for the collection fo distillate
- Piping and valves of and stainless steel
- Switchboard, complying with EC conformity mark, including plant synoptic and ELCB
- Emergency button

Complete with: Silenced air compressor

- 220-240 V / 50 Hz
- Air displacement: 50 L/min.
- Safety valve
- Pressure gauge
- Motor with thermal overload protection
- Operating pressure: max. 10 bar controlled by a pressure switch
- Noise level: 40 dB /1 m
- Size of the air tank: 24 lt.
- Power: 0,5 HP

Refractometer

- Measurement range of refractive index ND 1.300 – 1.700
- Measurement accuracy ND ± 0.0002
- Mass fraction (BRIX)
- Temperature range: 0/70°C
- Enlargement 2x

Installation & Basic operational training

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