

Order Code : 20213501.1.22
Name : Solid-liquid extraction apparatus

Distillation Column with Sieve Trays and Valve Tray



Technical Details

- Distillation Column : Two Interchangeable columns, one with sieve trays and and other with valve trays.
Material Stainless Steel, Dia 110mm, Seven trays in each.
- Pressure Gauge : Bourdon type, 0-2 kg/cm².
- Rotameter : For cooling water flow rate measurement.
- Steam Generator : Made of Stainless Steel, provided with Pressure Gauge & Level Indicator, Safety valve & insulated with ceramic wool and cladding with Aluminium foil..
- Reflux Divider : Arrangement to change R/D ratio automatically.
- Condenser : Shell & Tube type, made of Stainless Steel.
- Bottom Product Tank : Made of Stainless Steel, capacity 5 Ltrs.
- Distillate Tank : Made of Stainless Steel, capacity 5 Ltrs.
- Heaters : Nichrome wire heater.
- Temp. Sensors : RTD PT-100 type
- Control panel comprises of :
 - Digital Temp. Controller : PID Controller, 0-199.9°C, For Steam Reboiler
 - Digital Temp. Indicator : 0-199.9°C, with multi-channel switch
 - Reflux timer : For changing R/D ratio
 - With Standard make on/off switch, Mains Indicator etc.
- An ENGLISH instruction manual consisting of experimental procedures, block diagram etc. will be provided along with the Apparatus.
- The whole set-up is well designed and arranged on a rigid structure painted with industrial PU Paint.

Description

Interchangeable columns are made of Stainless Steel material with seven trays in each sieve trays column and valve trays column. An electrically heated reboiler is installed at the bottom of the column. The bottom product is collected in the tank. The vapours form at the top of column are condensed in the shell and tube type condenser by cooling water supplied by laboratory overhead tank. The condensate is divided into reflux and distillate by automatic reflux divider and R/D Ratio can be varied. Reflux is fed back to the column and distillate is received in a receiving tank. The complete column is insulated for minimizing the heat loss. Instrumentation is provided for pressure & temperature measurement wherever necessary.

Experimentation/Learning Objectives

- To estimate the batch curves for a binary system and verify the binary distillation equation for a known number of theoretical plates.
- To operate the column under total reflux condition and estimate the minimum number of theoretical plates required.

Utilities Required

- Electricity Supply: Single Phase, 220 V AC, 50 Hz, 32 Amp. MCB with earth connection. Earth voltage should be less than 5 volts.
- Water Supply: 2 LPM@1bar.
- Floor Drain.
- Floor area required: 1.5 m x 1.5 m
- Required Chemicals.
- Refractometer for analysis.

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.

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