

PACKED BED DISTILLATION COLUMN (EE-1628)

DESCRIPTION

The column is made of Stainless Steel material packed with Borosilicate Glass rasching rings. An electrically heated reboiler is installed at the bottom of the column. The bottom product is collected in the tank. The vapours from the top of column are condensed in the shell and tube type condenser by circulating cooling water, supplied by laboratory overhead tank. The condensate is divided into reflux and distillate by automatic reflux divider and L/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 & temp. measurement wherever necessary.

SCOPE OF EXPERIMENTATION

- To estimate the batch distillation curves for a binary system and verify the binary batch distillation equation for a known packed height.
- To operate the column under total reflux condition and estimate the METP for the packing.

UTILITIES REQUIRED

- Water Supply 2 LPM at 5 m head
- Electricity Supply : 1 Phase, 220 V AC, 6.5 kW.
- Required Chemicals.
- Refractometer for analysis.



TECHNICAL DETAILS

- Distillation Column : Material Stainless Steel
Dia 80mm, Length 900mm (approx).
- Packing Material : Borosilicate Glass Rasching Rings
- Pressure Gauge : Bourdon type
- 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 : Special 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 : 0-199.9°C, (For Re-boiler)
- Digital Temp. Indicator : 0-199.9°C, with multi-channel switch
With Standard make on/off switch, Mains Indicator etc.
- The whole set-up is well designed and arranged in a good quality painted structure.