

HM 210 BATCH DISTILLATION UNIT



GENERAL DESCRIPTION

This equipment demonstrates a process for separation of a mixture (one soluble in another) of two liquids of different boiling points.

The unit consists of a reboiler, two distillation columns, a condenser, a reflux tank, a top product tank, a vacuum pump, measuring instruments, and other accessories.

The liquid mixture is added to the reboiler where the mixed vapor with higher concentration of the lower boiling point component rises in the distillation column. The vapor leaves the top and is condensed in the condenser and the reflux tank. Part of the condensate in the reflux tank is fed back to the top of the column where heat exchange is taken place with the rising vapor. This results in vapor phase being richer in lower boiling point component, and the liquid phase being richer in higher boiling point component. The liquid phase moves down to the reboiler. Thus the mixture in the reboiler is richer in the higher boiling point component with time.

Two columns, sieve plate column and packed column with Raschig rings, can be interchanged simply by valve control. Lagging is provided for reboiler, sieve plate column, and condenser.

The unit is installed on a stainless steel frame.

TYPICAL EXPERIMENTS

- Comparison of plate column and packed column performance.
- Pressure drop across column vs boil up rate.
- Column efficiency vs boil up rate at total reflux.
- Top product composition vs time at constant reflux ratio.
- Manual control of reflux ratio.
- Plate to plate temperature profiles.
- Mass balance across the system.

TECHNICAL DATA

- Plate column : Stainless steel with a view port.
- Packed column with Raschig rings : 8 sieve plates, each with a sampling point.
- Reboiler : Borosilicate glass.
- Heater : Stainless steel.
- Maximum temperature : 3000 W.
- Condenser : 130°C.
- Reflux tank : Shell and tube, stainless steel, water cooled.
- Top product tank : Stainless steel.
- Reagents : Water/Methanol.
- Vacuum pump : 1 ea.
- Measuring instruments
 - Water manometer : 1 ea.
 - Rotameter : 1 ea.
 - Reflux ratio control : 0-100%.
 - Temperatures : 13 ea.
 - Watt digital display : For reboiler.
 - Pressure / vacuum gauge : For system pressure.
- Power supply : 220 V 1 Ph 50 Hz. Other power supply is available on request.

Net (unpacked) shipping dimensions WxLxH : 95 x 60 x 250 cm.

Net weight : Approx 80 kg.

