

Vapor Pressure Osmometer

For the Determination of Number Average Molecular Weight



The Model 833 Vapor Pressure Osmometer is an effective, easy to use tool for the determination of number average molecular weights of any non-volatile solute in the range of 100-25,000 Dalton.

Principles of Operation

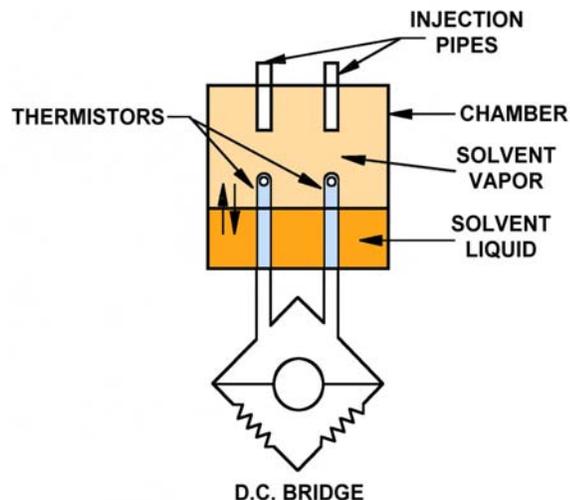
The vapor pressure osmometer operates on the principle of differential vapor pressure between a pure solvent and a solution. Two carefully matched thermistors are placed in a chamber saturated with solvent vapor. When solvent is placed on both thermistors, they assume the same temperature. If a solution is placed on one of the thermistors, condensation heats the thermistor until the vapor pressure is raised to that of the pure solvent. The change in temperature causes a resistance change in the thermistor. This change in resistance is measured by a sensitive bridge circuit and displayed on a panel meter, strip chart recorder and/or computer terminal. A calibration curve relates the change in resistance to the molal concentration of the solution.

The Model 833 VPO incorporates many improvements over other designs to simplify and improve molecular weight determinations. The cell and thermistor geometry are designed to minimize dilution of the sample by solvent condensation. This results in much slower "fall-off" and allows a much longer time window for readings. The syringes on the Model 833 are mechanically driven to insure more precise fluid delivery and are independently heated to minimize any equilibrium upset when introducing sample. This results in a faster equilibration time (typically 2-5 minutes), better reproducibility and greatly reduced cycle time per sample.

The thermistor design greatly improves reproducibility between users and removes the "technique" variable of other osmometers.

Specifications:

Minimum Conc: 5 x 10⁻⁵ mol/L (toluene)
 2.5 x 10⁻⁴ mol/L (water)
 MW Range: 100-25,000 Dalton (toluene)
 100-5,000 Dalton (water)
 Temp. Range: Ambient - 130°C
 (sub-ambient with cooled liquid circulation)
 Cell Current Range: 5, 20, 100 uA
 Response Time: 2 - 5 minutes
 Sample Volume: 0.25ml
 Power Requirements: 115/220V, 50/60 Hz, 1A
 Dimensions: Controller 8.5"L x 6.5"H x 9.25"D
 Cell 9.1"L x 10.6"H x 9.1"D
 Weight: Controller: 8 lbs., Cell: 19 lbs.
 Recorder Output: 0-200 mV
 Solvent Compatibility: Toluene, benzene, chloroform, dichloroethane, methylene chloride, acetone, dimethylformamide, pyridine and water



Ordering Information

J1833-100-00 - Model 833 Vapor Pressure Osmometer - Includes controller, measuring cell, associated cables and operation manual.

J1503-020-01 - Strip Chart Recorder - Includes cable, power cord, paper and operation manual.