WOLF LABORATORIES

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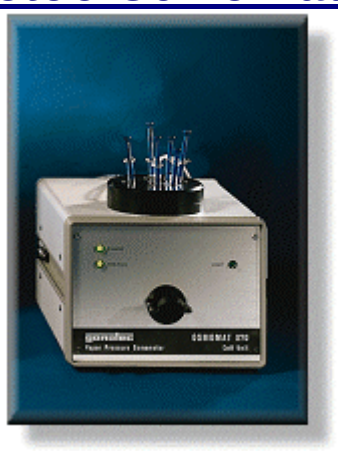
Gonotec Osmomat 070



The OSMOMAT 070 is suitable for the determination of the average molecular weight (Mn) of polymers which are soluble in different organic solvents and for the determination of the osmolality of aqueous solutions.

The instrument can measure the molecular weights in the range from 40 to 50,000 in organic solutions and up to approximately 5000 g/Mol in water

Advantages

- temperature difference measurement with two thermistors of high resolution
- display of the temperature difference by means of the Wheatstone-bridge with a resolution of about 5 x 10^{-5} °C
- auto zero adjustment of the measuring system
- cell is thermostated with a very high temperature constant
- adjustable cell temperature in steps of 1 °C between 30 °C and 130 °C thermistors are suitable for measuring electrically conducting liquids

Standard Set

lowest measurable concentration	toluene: 3.3 x 10^{-5} Mol/kg water: 1.7 x 10^{-4} Mol/kg
molecular weight range	toluene: 50 - 50.000 Dalton water: 50 - 5.000 Dalton
sample volume	approximately 1 mL per solution, at least 3 solutions in graduated molal conconcentration
specific vapor pressure of the sample to be measured	<0.1% of the solvent used
calibration substances	benzil/benzoic acid/naphthalene

The vapor pressure method is suitable for the determination of the average molecular weight of polymers which are soluble in a variety of different organic solvents and for the determination of osmolality of aqueous solutions.

Two thermistors, connected for difference measurement, are suspended in a thermostated measuring cell, which is filled with the saturated vapor of the solvent. The measuring probes, which are first covered with solvent droplets, will adapt to the cell temperature.

There is no temperature difference between the two probes. Exchanging the solvent droplet of one of the probes

by a droplet of the solution will lead to condensation of solvent vapor due to the lower vapor pressure of the solvent above the solution. The released condensation enthalpy increases the temperature of the solution droplet, which simultaneously leads to an increase of the vapor pressure.

After reaching the vapor pressure equilibrium of the solution droplet, a relative stable temperature is obtained at the solution droplet.

This temperature is converted by the measuring system to a direct voltage signal and is thereby as a measuring value at the user's disposal. The resulting relative measuring value is nearly proportional to the osmolal concentration of the solutions, may be however affected by heat loss and non ideal behavior of the polymer solutions.

By calibrating with solutions of known molality and osmolality and by means of a final statistical calculation of the measuring value, the nonlinear behavior may be eliminated.