

PARTIAL MOLAR VOLUMES

Mod. C-PMV/EV

DESCRIPTION

Due to intermolecular interactions, the total volume measured when two real liquids (for example ethanol and water) are mixed, is different from the total volume calculated starting from the single volumes of the two liquids. There is therefore a volume contraction. To describe the non-ideal behaviour in the mixing phase, the partial molar quantities that depend on the composition of the system are defined. These values can be determined experimentally using the apparatus.

In particular, we want to measure the density of different ethanol-water mixtures of known composition at a temperature of 20 ° C using a series of pycnometers. The real volumes and the average molar volumes of the ethanol-water mixtures are then calculated, as well as the partial molar volumes of each liquid for the compositions. Finally, the molar volumes of pure substances are compared at a temperature of 20 ° C.



TRAINING PROGRAM

- Principles of Thermodynamics
- Ideal and non-ideal behaviour of gases and liquids
- Volume contraction
- Molar quantities and partial molar volumes

COMPONENTS

- Thermostatic bath with immersion thermostat
- Support base
- Support rod
- Clamps
- Universal pliers
- 9 25 ml calibrated pycnometers
- 9 125 ml bottles, narrow neck
- 9 glass funnels
- 2 50 ml glass beakers
- Pasteur pipettes with bulb
- Plastic tubes for thermostatic bath
- Wash bottle
- Chemical reagents:
 - Absolute ethyl alcohol
 - Distilled water

REQUIRED (NOT INCLUDED)

- PRECISION BALANCE, 620 g; 1 mg

SUPPLIED WITH

THEORETICAL - EXPERIMENTAL HANDBOOK

