

Steam Distillation of a Volatile Compound

Practical 02 | Pharmaceutical Organic Chemistry II

Aim

To study Steam Distillation of a Volatile Compound, and interpret the recorded observations.

Principle

- For substantially immiscible liquids, the total vapour pressure is the sum of the component vapour pressures; this permits co-distillation below the normal boiling point of the higher-boiling component.
- The property is obtained from a defined observable under controlled conditions.
- Replicate measurements, instrument checks and consistent units are needed before comparison.

Materials and Apparatus

- Instructor-selected volatile material, steam-distillation apparatus, condenser and receiver.
- Assigned test material and calibration or comparison material.
- The apparatus specified for this property, a balance or volumetric equipment where relevant, and a record sheet.

Method

1. Identify the assigned volatile material and its compatibility with the demonstration.
2. Check the assembled steam-distillation path and condenser arrangement with the instructor.
3. Observe steam introduction and collection of the co-distillate under the approved conditions.
4. Record the collection interval and the appearance of the receiver contents.
5. Separate and identify the recovered phase using the assigned method.
6. Calculate recovery and explain the role of the two vapour-pressure contributions.

Observation Record

Complete this record using actual laboratory findings or the provided teaching data.

Observation / parameter	Record / finding
Feed identity	_____
Distillate volume	_____
Separated target mass	_____
Distillation behaviour	_____
Recovery	_____

Calculations and Interpretation

- Percentage recovery = recovered target mass / target mass initially present $\times$ 100.

Result

Record the actual finding, calculated value with units where relevant, and a conclusion supported by the observations.

Finding: _____

Conclusion: _____

Precautions

- Keep temperature and test conditions consistent across comparative readings.
- Record raw readings before rounding calculated values.
- Do not compare results obtained with different methods as if they were interchangeable.

Viva Questions

1. Why control the test conditions?

A change in conditions may alter the measured property independently of the intended variable.

2. Why retain replicate readings?

They show repeatability and help identify an anomalous measurement.

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