

Study of Air Humidity by Wet/Dry Bulb and Dew Point

Practical 06 | Pharmaceutical Engineering

Aim

To study Air Humidity by Wet/Dry Bulb and Dew Point, and interpret the recorded observations.

Principle

- Wet-bulb depression reflects evaporative cooling. Psychrometric interpretation depends on air pressure and the appropriate measurement conditions.
- 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

- Wet/dry bulb demonstration, pressure record and psychrometric chart or supplied dew-point data.
- 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 measured property, units and controlled variables before setting up the apparatus.
2. Check the instrument, zero or calibration and record the relevant operating conditions.
3. Prepare a representative measured portion without changing its intended composition.
4. Obtain the readings specified for the property and repeat under the same conditions.
5. Calculate the required property, including corrections stated for the apparatus or method.
6. Summarize the replicate results and explain the effect of the variable studied.

Observation Record

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

Observation / parameter	Record / finding
Dry-bulb temperature	_____
Wet-bulb temperature	_____
Pressure	_____
Dew point	_____
Relative humidity	_____

Calculations and Interpretation

- Relative humidity = actual water-vapour pressure / saturation vapour pressure at the dry-bulb temperature $\times 100$.
- Use the chart/calculation matching the stated pressure and ventilation.

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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