

Determination of Particle Size by Sieving

Practical 01 | Physical Pharmaceutics II

Aim

To determine Particle Size by Sieving, and interpret the recorded observations.

Principle

- A sieve stack divides a powder by aperture-related fractions and provides a mass-weighted size distribution.
- 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

- Sieve stack, sieve shaker, balance and assigned powder.
- 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. Weigh the assigned powder and record the sieve apertures.
2. Arrange the stack in the stated descending-aperture order with a receiving pan.
3. Run the assigned sieving demonstration and record its duration and conditions.
4. Weigh each retained fraction and check total recovered mass.
5. Calculate percentage retained and cumulative retained or passing values.
6. Plot the size-distribution result with its mass-weighted basis stated.

Observation Record

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

Observation / parameter	Record / finding
Sieve aperture	_____
Retained mass	_____
Percent retained	_____
Cumulative passing	_____

Calculations and Interpretation

- Percent retained = retained mass/total recovered mass × 100.
- Use the stated fraction-size convention when calculating a mean size.

Worked Illustration

Illustration: a fraction of 8.0 g from 40.0 g total recovered powder represents 20.0% retained.

The values in this illustration are for calculation practice.

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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