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Foam Height and Surfactant Content of Shampoo

Practical 20 - Practical study

Aim

To measure foam behaviour and surfactant content by defined, separate tests.

Principle

Foam height is a physical response influenced by concentration, water, temperature and agitation. Active surfactant content requires a suitable class-specific analytical method; foam height is not an assay.

Materials and Requirements

- Shampoo model and defined water/dilution conditions
- Standardised cylinder or selected foam apparatus
- Validated surfactant assay for the relevant ionic or nonionic class
- Approved method or teaching-data pack and a dated record sheet

Procedure

1. Define the preparation or dataset, study question and method version. Record identities, units and the criteria to be used before examining the outcome.
2. Prepare the specified dilution with fixed water quality and temperature.
3. Apply a reproducible agitation programme and measure foam height immediately and at defined intervals.
4. Analyse active surfactant with the selected class-specific method, including blank and standardisation or calibration.
5. Compare replicate physical and analytical results while keeping their interpretations separate.
6. Retain the original observations and calculations. State deviations, missing information and the limits of the conclusion; do not replace measured values with expected results.

Observations and Record

Enter actual measurements or the supplied teaching data. Record the method, material identity, conditions and units.

Preparation	Initial foam / mm	Foam at stated time / mm	Active surfactant / %
Replicate 1	Record	Record	Calculate
Replicate 2	Record	Record	Calculate
Blank / check	Record	Record	Evaluate

Calculations

- Foam retention (%) = foam height at stated time / initial foam height x 100

Worked Example

Illustrative initial height 80 mm and height after the defined interval 60 mm give 75% retention.
An independently measured active content is reported separately; retention does not supply that percentage.

Result and Interpretation

• State dilution, water, temperature, agitation and elapsed-time conventions with the results.

Precautions

• Avoid comparing different agitation or cylinder geometries.
• Select the assay for the actual surfactant class.
• Do not equate foam with cleansing efficacy.

Viva Questions and Answers

Does more foam prove stronger cleaning?

Cleaning depends on more than foam formation.

Why control water hardness?

It can affect surfactant and foam behaviour.

Can one assay cover every surfactant?

The method must suit the surfactant chemistry.

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