

Moisturizing Cream Consistency Analysis

Understanding the consistency and adhesive properties of moisturizing creams is crucial for optimizing formulations. Proper consistency ensures easy application, while the adhesive properties affect how well the cream stays on the skin. This analysis helps maintain product quality and ensures consumer satisfaction by controlling these key attributes.

Test Principle:

- The consistency of two moisturizing creams is evaluated by back extrusion using a plunger. This test measures the firmness and adhesive forces required to extrude the cream.



Equipment:

- Instrument: CTX Texture Analyzer with 5 kg load cell
- Accessories: Dual Extrusion Cell (TA-DEC), Fixture Base Table (TA-BT-KIT)
- Software: Texture Pro

Settings:

- Test Type: Compression
- Pre-Test Speed: 1.0 mm/s
- Test Speed: 2.0 mm/s
- Post-Test Speed: 2.0 mm/s
- Target Distance: 25 mm
- Trigger Force: 10 g

Procedure:

- Attach the extrusion disc to the load cell.
- Secure the extrusion cell on the base table and align it with the plunger.
- Fill the extrusion container 75% with the cream sample, ensuring minimal air bubbles.
- Set the probe 10 mm above the sample surface and start the extrusion test.

Observations:

Figure I: Shows the firmness and consistency of the premium (Sample A) and budget (Sample B) moisturizing creams. The firmer cream (Sample B) has a higher force peak, while Sample A has a higher adhesive component.

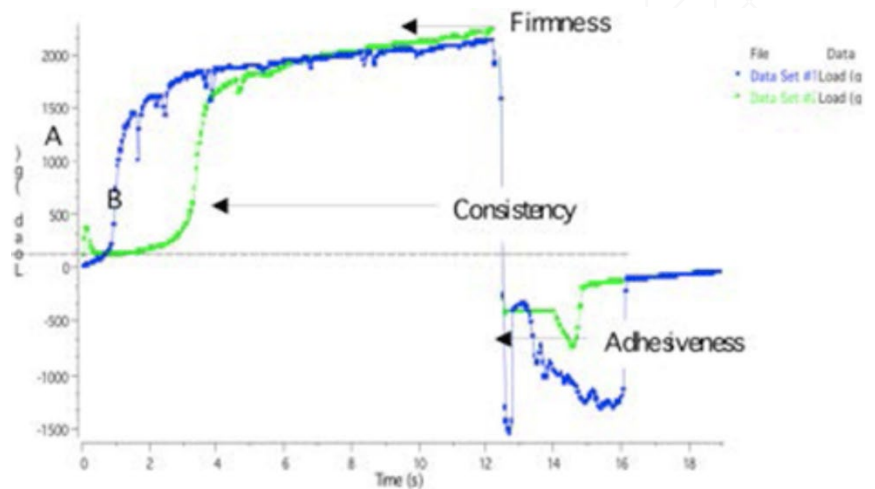


Figure I

Results:

- Firmness (Hardness): The higher the peak, the firmer the cream. Sample B is firmer than Sample A.
- Consistency (Work Done): The area under the positive curve represents the work required to extrude the sample. Sample A has a higher consistency, suggesting it is thicker.
- Adhesiveness: Measured by the area under the negative curve, Sample A is more adhesive than Sample B.

Results Table:

Sample A (Premium):

- Hardness: 2053.0 g \pm 23.7
- Work Done: 398.8 mJ \pm 41.54

Sample B (Budget):

- Hardness: 2262.8 g \pm 13.8
- Work Done: 377.65 mJ \pm 16.32

Sample	Hardness (g)	Hardness Work Done (mJ)
A	2053.0 \pm 23.7	398.8 \pm 41.54
B	2262.8 \pm 13.8	377.65 \pm 16.32

Conclusion:

Sample B is firmer but less consistent than Sample A, while Sample A has higher adhesiveness. This test is useful for product development and quality control to ensure consistency across production batches and improve formulation based on texture performance.