

Moisturizing Cream Firmness Analysis

Understanding the firmness and consistency of moisturizing creams is essential for ensuring proper application, consumer satisfaction, and product consistency. The analysis helps optimize formulations to achieve the desired texture, smoothness, and ease of use, as well as to prevent graininess or trapped air bubbles.

Test Principle:

- The test evaluates the firmness of two moisturizing creams by penetration using a hemispherical probe. This simulates how easily a human finger would deform the cream during application, providing insights into the cream's consistency and ease of use.

Equipment:

- Instrument: CTX Texture Analyzer with 5 kg load cell
- Probe: Hemispherical Probe (TA-43)
- Fixture: 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:

1. Attach the hemispherical probe to the load cell.
2. Place the cream sample under the probe and align it centrally.
3. Start the penetration test, allowing the probe to deform the sample to a depth of 25 mm.
4. Wipe the probe clean after each test.



Observations:

Figure I: Shows the firmness comparison between two moisturizing creams (Premium and Budget). The firmer sample (Premium) requires more force to deform.

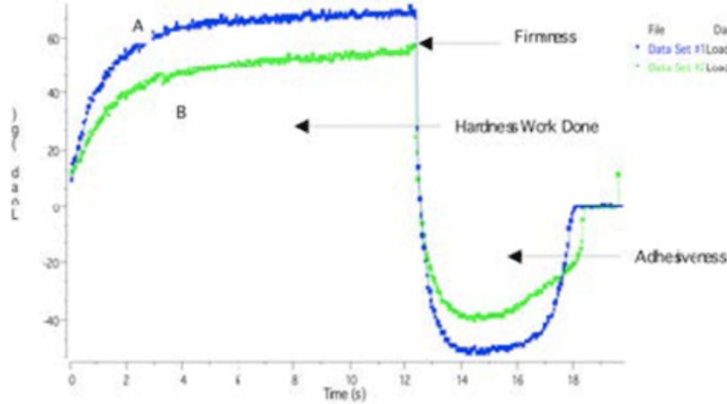


Figure I

Figure II: Load vs. Distance graph shows the energy required to compress each sample. The larger the area under the curve, the more energy is needed to deform the cream.

Results:

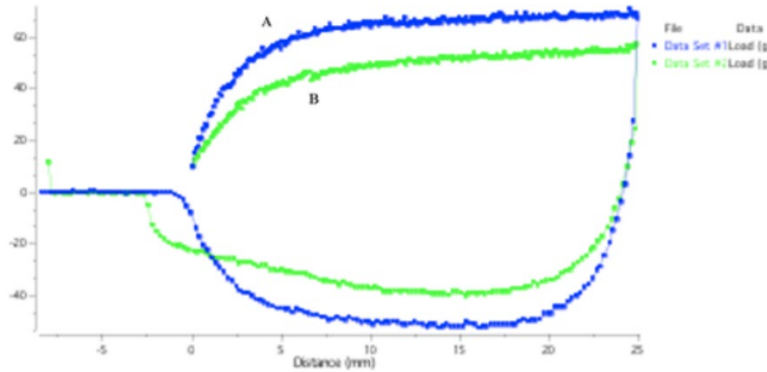


Figure II

Sample A (Premium):

- Hardness: 70.5 g
- Work Done: 14.91 mJ
- More adhesive

Sample B (Budget):

- Hardness: 57.1 g
- Work Done: 11.38 mJ
- Less adhesive

Sample	Hardness (g)	Hardness Work Done
A	70.5	14.91
B	57.1	11.38

Conclusion:

The test shows that the Premium cream is firmer and more adhesive than the Budget cream, requiring more energy to deform. These insights are crucial for product formulation and consistency, ensuring the moisturizing cream meets consumer expectations.