

Moisturizing Cream Texture Analysis

This analysis will determine firmness, spreadability, and adhesiveness of creams using a cone probe with the CTX Texture Analyzer and Spread Test Fixture (TA-STF).

Background:

- Five samples tested: Thistle Body Balm, Thistle Body Butter, Thistle Hand Lotion, CereVe Moisturizing Cream, and Cetaphil Moisturizing Cream.
- Samples stored at room temperature (21°C).
- The test measures the force required to penetrate and retract from cream samples, providing data on firmness, stickiness, and spreadability.



Equipment:

- CTX Texture Analyzer with 1,500 g load cell (CTX015) (Fig. 1)
- Fixture Base Table (TA-BT-KIT)
- Spread Test Fixture (TA-STF)
- Texture Pro Software

Test Settings:

- Type: Compression
- Target Distance: 12 mm
- Trigger Load: 1.5 g
- Speeds: Pre-test and test speed at 1 mm/s



Figure 1

Procedure:

1. Attach the top cone probe to the CTX Texture Analyzer.
2. Insert table bolts and adjust the Fixture Base Table.
3. Attach the bottom cup to the Fixture Base Table and align the cone probe.
4. Place the cream sample on the table; align under the probe.
5. Position the probe 8 mm above the sample.
6. Set test parameters in TexturePro software.
7. Run the test; clean the probe after each test.
8. Repeat for all samples.



Figure 2

Observations:

- At a 1.5 g trigger load, the probe penetrates the cream sample at 1 mm/s to a 12 mm depth (Fig. 2).
- Load vs. Time Graph (Fig. 3): Compares firmness, stickiness, and spreadability across five samples.

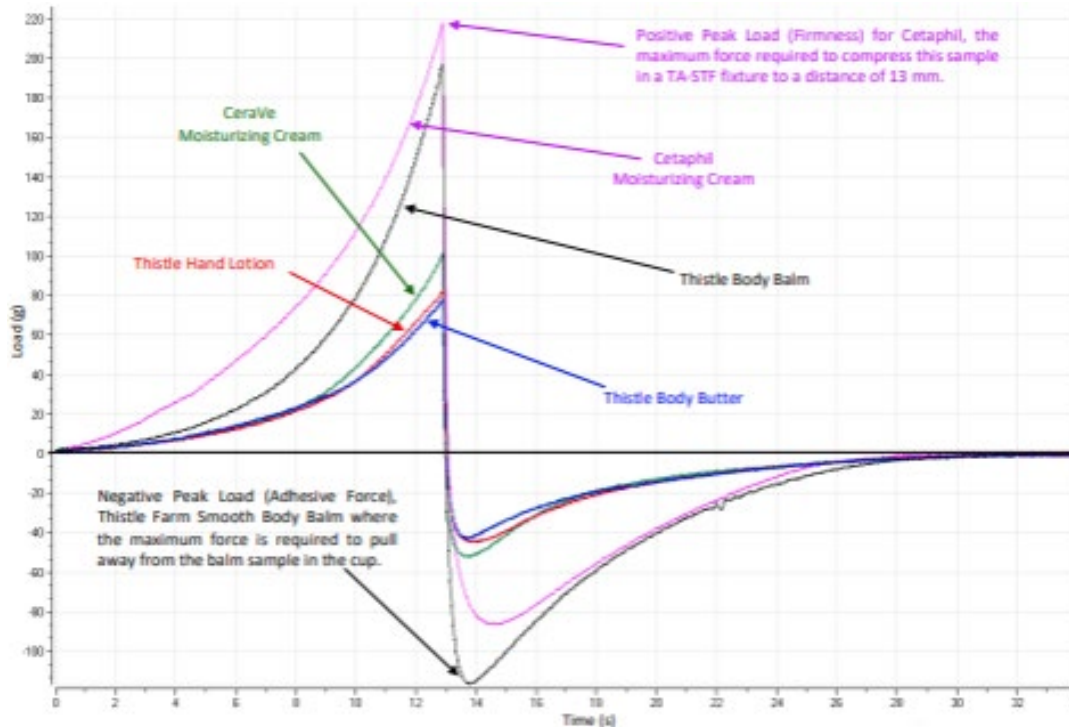


Figure 3

Results:

Firmness (Positive Peak Load):

- Thistle Body Balm: Highest firmness among Thistle samples; almost as firm as Cetaphil.
- Thistle Hand Lotion and Body Butter: Similar softness and stickiness; easier to spread.
- Comparison: Thistle samples vs. CeraVe and Cetaphil moisturizing creams show similar hardness and stickiness

Adhesive Force (Negative Peak Load):

- Thistle Body Balm requires the highest force to retract the probe, indicating high stickiness.

Discussion:

- Firmness: Measured by maximum force (Peak Load) needed to compress samples; higher values = firmer creams.
- Hardness Work Done: Reflects work required to spread cream; easier spreading requires less work.
- Adhesive Force: Indicates force needed to separate the probe from the cream; higher values = stickier creams.
- Adhesiveness: Total work needed to remove cream from a surface.

Conclusion:

- The analysis provides insights into the ideal firmness and adhesiveness of moisturizing creams.
- Consistent procedures and equipment setup are crucial for reproducible results.