

# Cheese Triangle Texture Analysis

Understanding the firmness and stickiness of cheese spread triangles is essential for ensuring product quality, especially when comparing full-fat and low-fat varieties. Firmness impacts the texture and mouthfeel, while stickiness influences how easily the product spreads and interacts with packaging and utensils.

## Test Principle:

- The firmness and stickiness of two different brands of cheese spread triangles were evaluated by penetration using a 1-inch spherical probe.

## Background:

- Cheese texture is affected by fat content, moisture, and protein matrix. Higher fat and moisture levels result in softer cheeses, while the protein matrix contributes to firmer textures. This analysis is critical for assessing product consistency, especially for low-fat varieties attempting to mimic the texture of full-fat counterparts.



## Equipment:

- Instrument: CTX Texture Analyzer with 5 kg load cell
- Probe: 1-inch Spherical Probe (TA-49)
- Fixture: Base Table (TA-BT-KIT)
- Software: Texture Pro

## Settings:

- Test Type: Compression
- Pre-Test Speed: 1.5 mm/s
- Test Speed: 2.0 mm/s
- Post-Test Speed: 2.0 mm/s
- Target Distance: 8 mm
- Trigger Force: 4.5 g

## Procedure:

1. Align and secure the cheese sample on the fixture base table.
2. Run the penetration test with the spherical probe penetrating the sample to a depth of 8 mm.
3. Maintain consistent spacing of test locations on the sample, at least 20 mm apart.



**Observations:**

- Figure I: Shows the force required to penetrate both full-fat and low-fat cheese triangles. The higher the maximum force, the firmer the sample. The low-fat variety is firmer than the full-fat variety.
- Figure II: Displays force vs. distance, indicating hardness and work done. The area under the curve represents the energy required to deform the sample. Adhesiveness is measured as the force needed to separate the probe from the cheese.

**Results:**

**Full-Fat Cheese:**

- Hardness: 179.2 g
- Hardness Work Done: 7.62 mJ
- Adhesive Force: 47.7 g
- Adhesiveness: 2.26 mJ

**Low-Fat Cheese:**

- Hardness: 255.8 g
- Hardness Work Done: 10.54 mJ
- Adhesive Force: 40.3 g
- Adhesiveness: 1.01 mJ

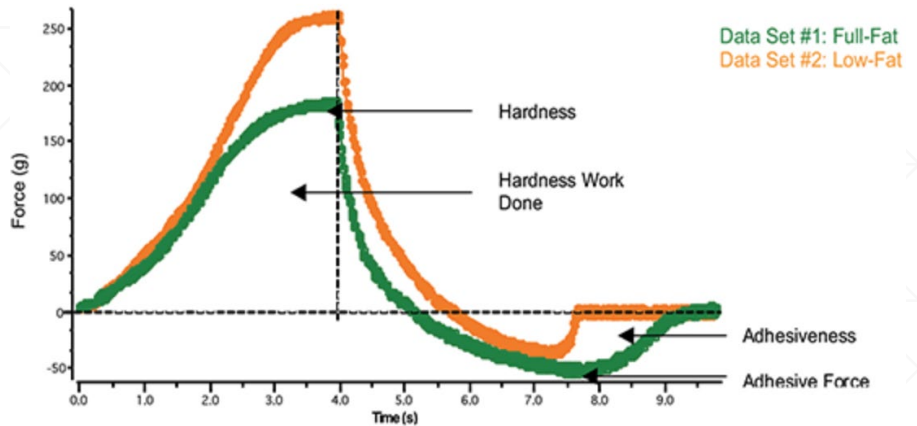


Figure I

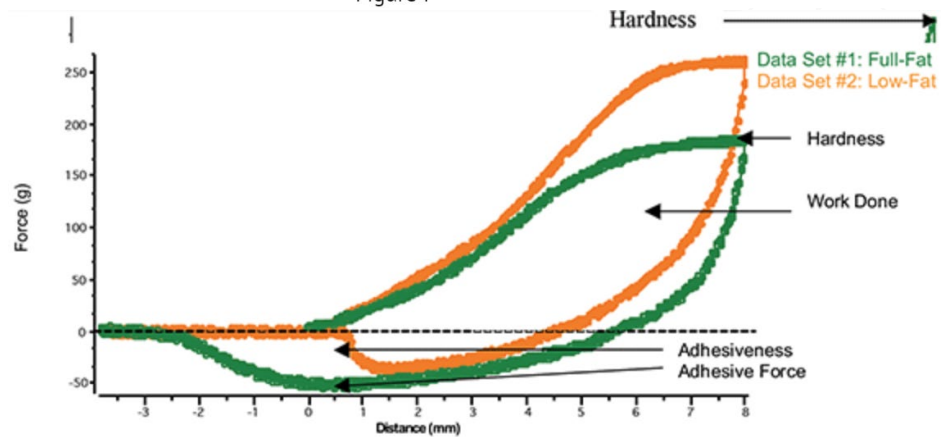


Figure II

**Conclusion:**

The low-fat cheese spread triangle is firmer but less adhesive than the full-fat version. This analysis helps in developing low-fat products that mimic the texture of full-fat variants, ensuring consumer satisfaction and consistency in product quality.