

Hard Candy Texture Analysis

Understanding the hardness, fracturability, and crunchiness of hard candy is crucial for product development and quality control. These texture properties influence the consumer's sensory experience and satisfaction. Monitoring these characteristics helps optimize formulations, cook times, and moisture content, ensuring a consistent product.

Test Principle:

- Evaluate the hardness and crunchiness of candy using a CTX Texture Analyzer with a 2 mm cylinder probe and a confectionery jig.

Equipment:

- Instrument: CTX Texture Analyzer with a 50 kg load cell
- Accessories: Confectionery Jig (TA-CJ), Fixture Base Table (TA-BT-KIT), 2 mm Cylinder Probe (TA-39)
- Software: Texture Pro

Settings:

- Test Type: Compression
- Pre-Test Speed: 1.0 mm/s
- Test Speed: 1.0 mm/s
- Post-Test Speed: 1.0 mm/s
- Target Type: Deformation
- Target Distance: 15 mm
- Trigger Force: 15 g



Procedure:

1. Attach the 2 mm cylindrical probe to the load cell.
2. Position the fixture base table and confectionery jig securely.
3. Align the candy sample centrally within the jig to ensure uniformity across tests.
4. Set the probe to begin the test 5 mm above the sample and align the jig to avoid friction effects.
5. Run the penetration test, compressing the candy to a 15 mm depth.
6. Clean the probe and jig between tests to ensure consistency.

Observations:

- Figure I: Load vs. Time graph demonstrates candy hardness and fracturability. The maximum peak force represents hardness, while the initial fracture point indicates fracturability. Higher values suggest a less brittle product.

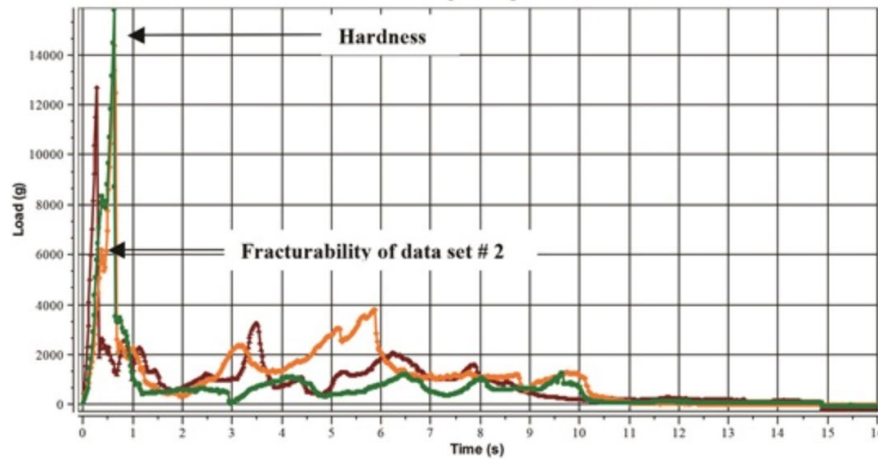


Figure 1

- Figure II: Load vs. Distance graph shows the work done to penetrate the candy, representing the energy required to deform it with the molars.

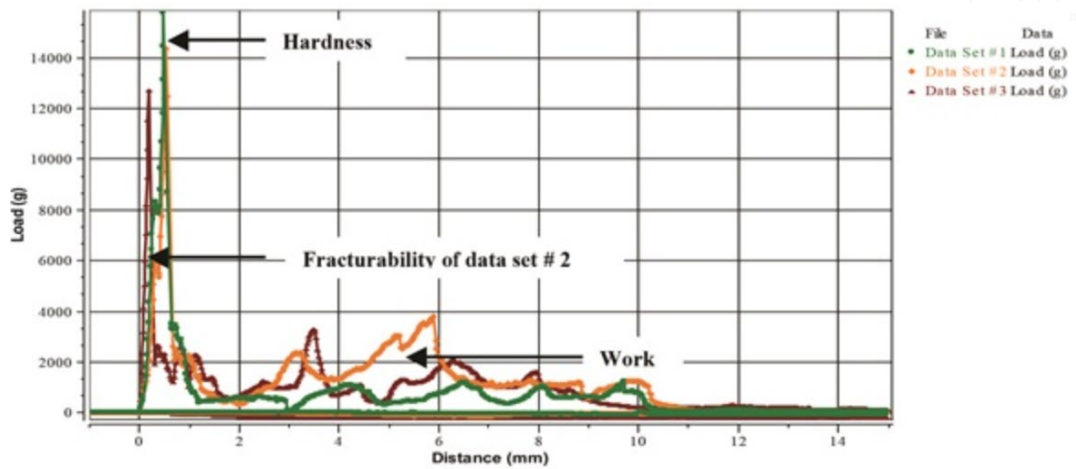


Figure II

Results:

Average Results (12 Samples):

- Hardness: 14,068 g \pm 1051
- Work Done: 156.8 mJ \pm 42.3
- Fractures (Crunchiness): 17 \pm 4

Conclusion:

Hardness and crunchiness measurements provide critical data for optimizing the formulation of hard candy. This analysis helps determine the ideal balance between firmness and brittleness, ensuring consumer preferences are met while maintaining product consistency.