

Noodle Elasticity Analysis

Understanding the elasticity of noodles is essential for evaluating product quality, texture, and cooking performance. Elasticity affects the noodle's stretchability and resilience, which are key indicators of consumer satisfaction and production consistency.

Test Principle:

- The elasticity of noodles is evaluated using a noodle tensile fixture. The test measures the force required to stretch and break the noodle, providing insights into tensile strength and extensibility.

Equipment:

- Instrument: CTX Texture Analyzer with a 50 kg load cell
- Accessories: TA-NTF Noodle Tensile Fixture, Fixture Base Table (TA-BT-KIT)
- Software: Texture Pro

Settings:

- Test Type: Tension
- Pre-Test Speed: 1.0 mm/s
- Test Speed: 3.0 mm/s
- Post-Test Speed: 3.0 mm/s
- Target Distance: 40 mm
- Trigger Load: 5 g

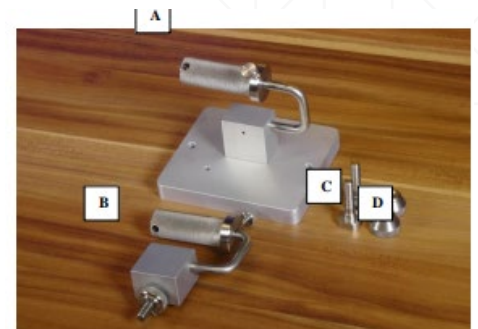
Note: Thicker samples may require a higher trigger load and a longer tension distance.

Sample Preparation:

- Cook noodles in 300 mL of boiling water for 5 minutes in a 900W microwave. Let cool for 1 minute before testing.

Procedure:

1. Attach the lower and upper friction rollers to the texture analyzer.
2. Wind the noodle sample around the rollers, ensuring a firm grip.
3. Start the test, stretching the noodle over a 40 mm distance at 3 mm/s until it breaks.
4. Ensure no weaknesses along the noodle's length before testing.



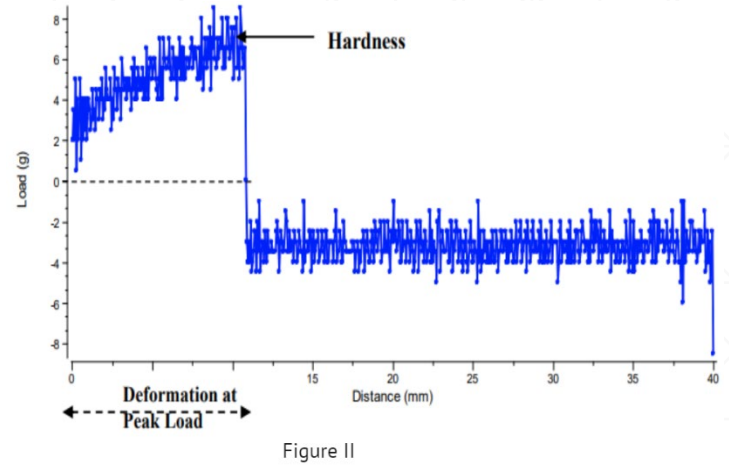
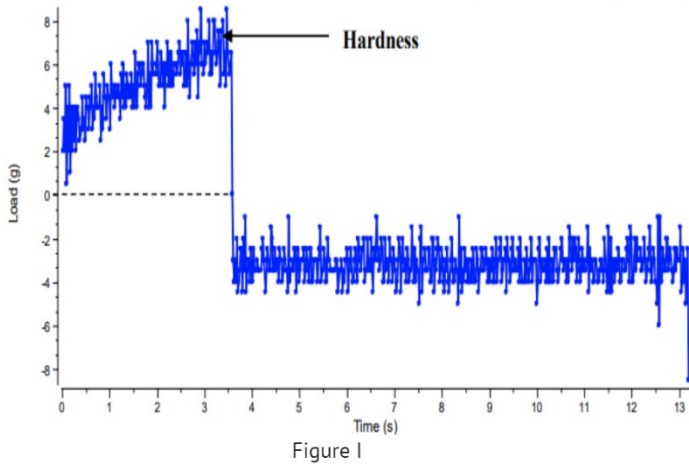
TA-NTF Noodle Tensile

- A Lower Friction Roller
- B Upper Friction Roller
- C T-bolts
- D Thumb Screws

Observations:

Figure 1: Load vs. Time graph shows noodle extensibility, with the maximum peak representing the force required to break the noodle.

Figure 2: Load vs. Distance graph displays the distance to the break point, indicating the noodle's elasticity. The longer the distance, the more elastic the noodle.



Results:

Noodle Elasticity:

Peak Load: 8 g ± 0.7

Deformation at Peak Load: 9.84 mm ± 0.97

Discussion:

The test provides insights into noodle hardness and elasticity. The peak load represents the force required to break the noodle, while the distance to the break point reflects the elasticity. Longer distances indicate greater stretchability, an important factor for consumer preference.

Conclusion:

This analysis ensures consistent noodle quality by measuring elasticity and tensile strength. These parameters are critical for product development and optimizing noodle texture for consumer satisfaction.