

# Processed Cheddar Cheese Texture Analysis

Understanding the cutting force of processed cheddar cheese is critical for assessing its firmness and texture. These factors impact consumer satisfaction, as well as production consistency. This analysis ensures that the cheese maintains its desired texture for easy slicing and consumer preference.

## Test Principle:

- The hardness and cutting force of processed cheddar cheese are evaluated using a wire cutter on a CTX Texture Analyzer. This test measures the force required to shear the sample and the work done during the cutting process.

## Equipment:

- Instrument: CTX Texture Analyzer with a 5 kg load cell
- Accessories: Wire Shear Plate (TA-WSP), Fixture Base Table (TA-BT-KIT)
- Software: Texture Pro

## Settings:

- Test Type: Compression
- Pre-Test, Test, and Post-Test Speed: 0.5 mm/s
- Target Distance: 30 mm
- Trigger Force: 50 g

## Sample Preparation:

- Cut samples into uniform rectangles or squares and refrigerate until testing.

## Procedure:

1. Attach the wire cutter to the texture analyzer.
2. Secure the fixture base table and align the wire cutter with the base plate.
3. Place the sample centrally on the base plate and lower the wire cutter just above the sample.
4. Start the test, cutting the sample over a 30 mm distance.



**Observations:**

Figure I: Load vs. Time graph shows the cutting force of a 90 mm x 30 mm cheddar block. The maximum force indicates sample hardness, while the area under the curve represents the work done.

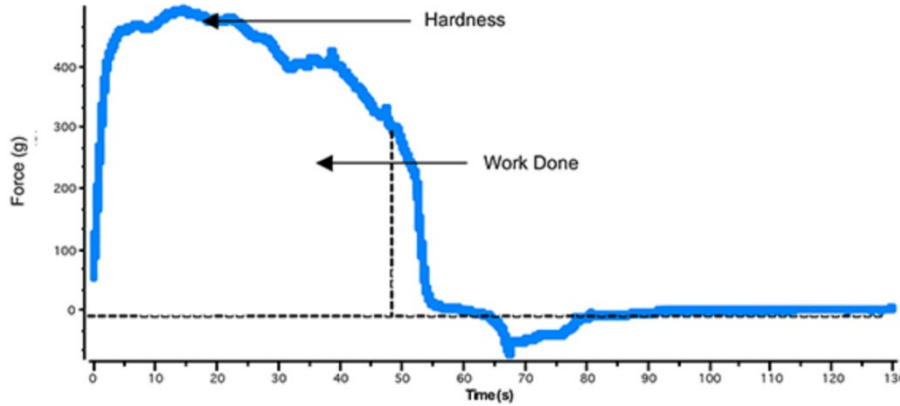


Figure I

Figure II: Load vs. Distance graph displays cutting force throughout the test, with negative values as the wire cutter reverses through the sample.

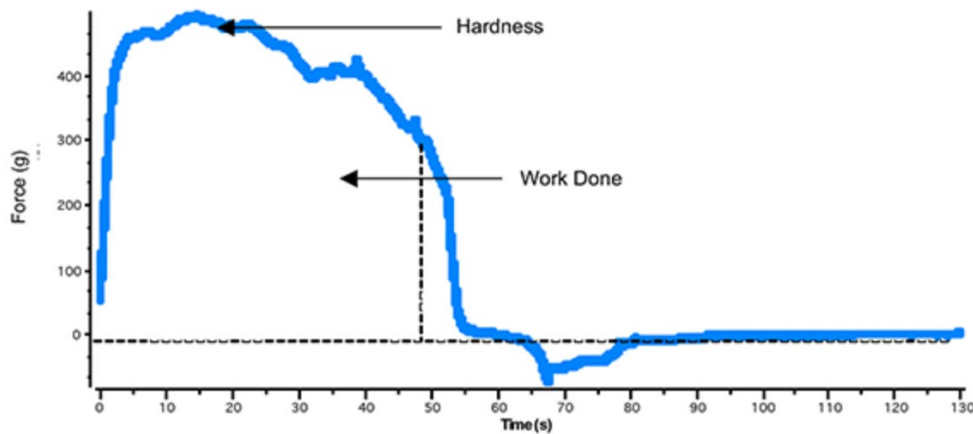


Figure II

**Results:**

Hardness: 491.3 g ± 1.8

Work Done: 109.63 mJ ± 1.45

**Discussion:**

The cutting force rapidly increases as the wire penetrates the sample, plateauing once the sample is fully sheared. Higher maximum force values correspond to firmer samples. Work done reflects the energy required to cut the cheese, which helps in comparing cheese textures.

**Conclusion:**

This test is essential for evaluating the firmness and texture of processed cheddar cheese, ensuring product consistency and quality control. The results help manufacturers adjust formulations to achieve the desired cheese texture.